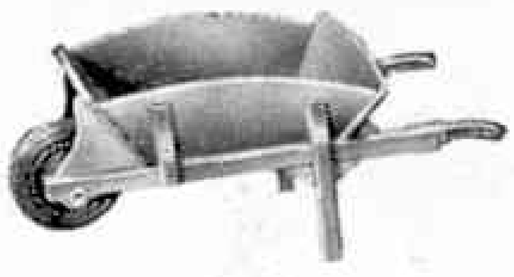
VOL. XXXIV. No. 12 DECEMBER 1949

# MECCANO MAGAZINE

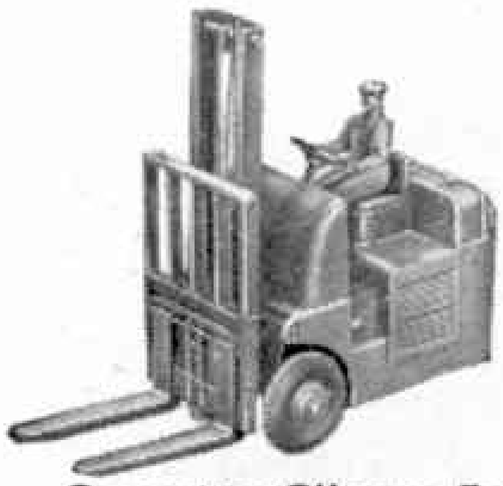
GENERAL REPAIRS

6D.

# DINKY TOYS



**Wheelbarrow**
**No. 105b**
Price **1/2** each



**Coventry Climax Fork Lift Truck, No. 14c**
The loading carriage is raised by turning a handle.
Price **5/9** each

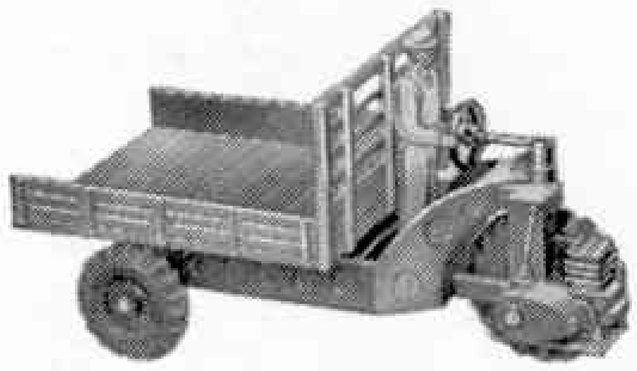
**B.E.V. Electric Truck**
**No. 14a**
Price **1/11** each

**The Standard "Vanguard" Saloon, No. 40e**
Price **1/9** each

**Massey-Harris Tractor**
**No. 27a**
Price **3/2** each

**NEW**

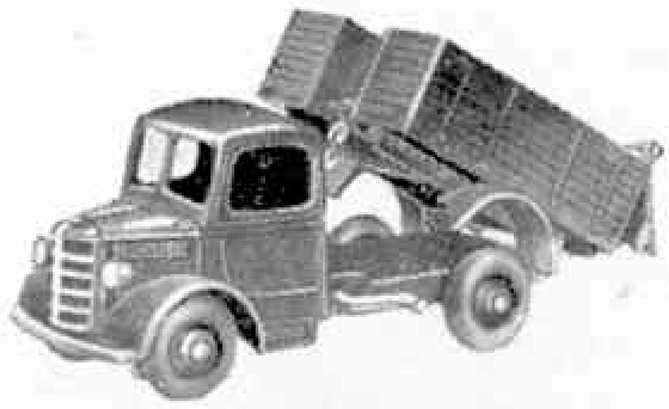
**READY DURING THE MONTH**



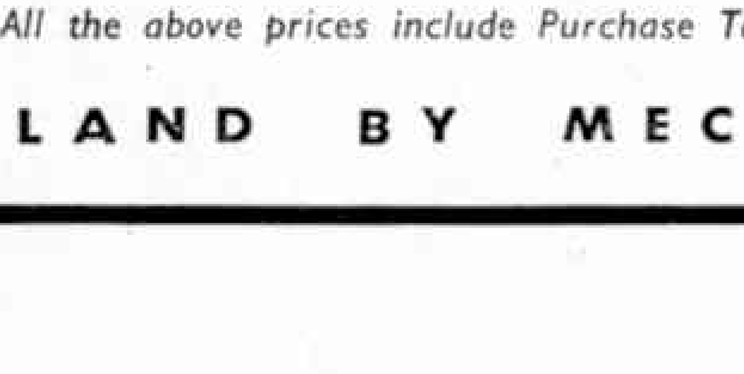
**Motocart**
**No. 27g**

This interesting three-wheeled farm truck has a high-fronted tipping body.

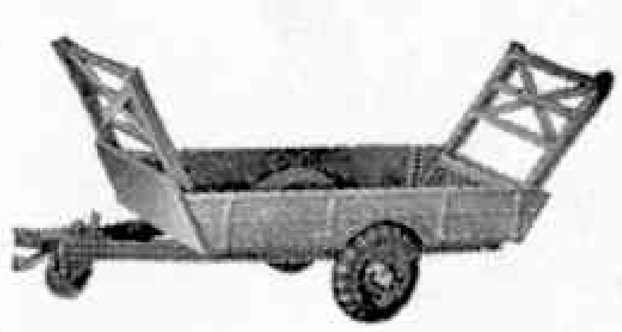
Price **4/6** each



**Bedford End Tipper**
**No. 25m**
Price **4/3** each

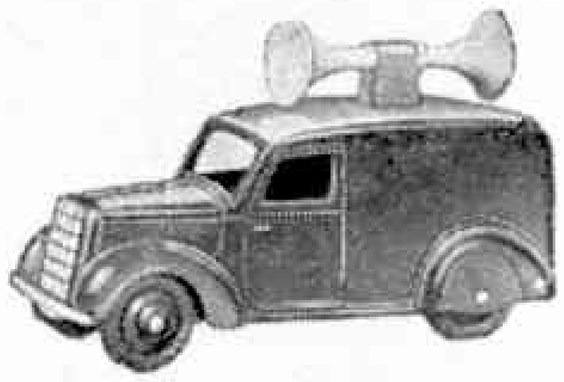


**Ford "Fordor" Sedan**
**No. 139a**
Price **2/6** each



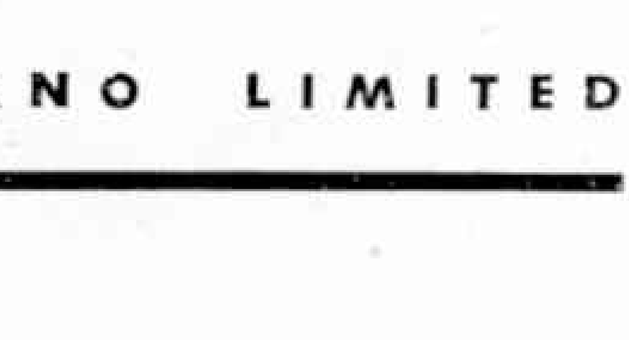
**Harvest Trailer**
**No. 27b**
Price **2/10** each

**4-wheel Hand Truck**
**No. 105c**
Price **1/11** each

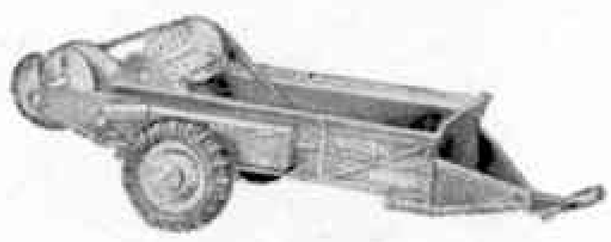


**Loud Speaker Van**
**No. 34c**
Price **1/3** each

**Grass Cutter**
**No. 105e**
Price **1/8** each



**Bedford Refuse Wagon**
**No. 25v**
Sliding covers, tipping mechanism, opening rear door
Price **4/9** each

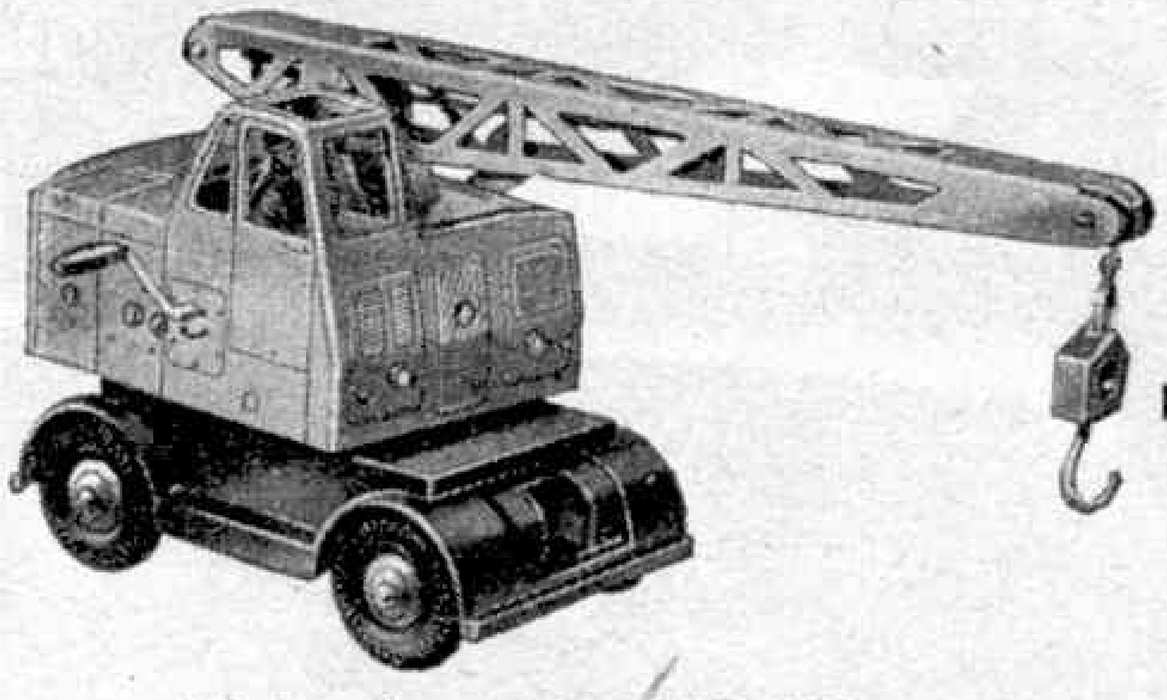


**Massey-Harris Manure Spreader, No. 27c**
Price **3/9** each

*All the above prices include Purchase Tax*

**MADE IN ENGLAND BY MECCANO LIMITED**

# SUPERTOYS

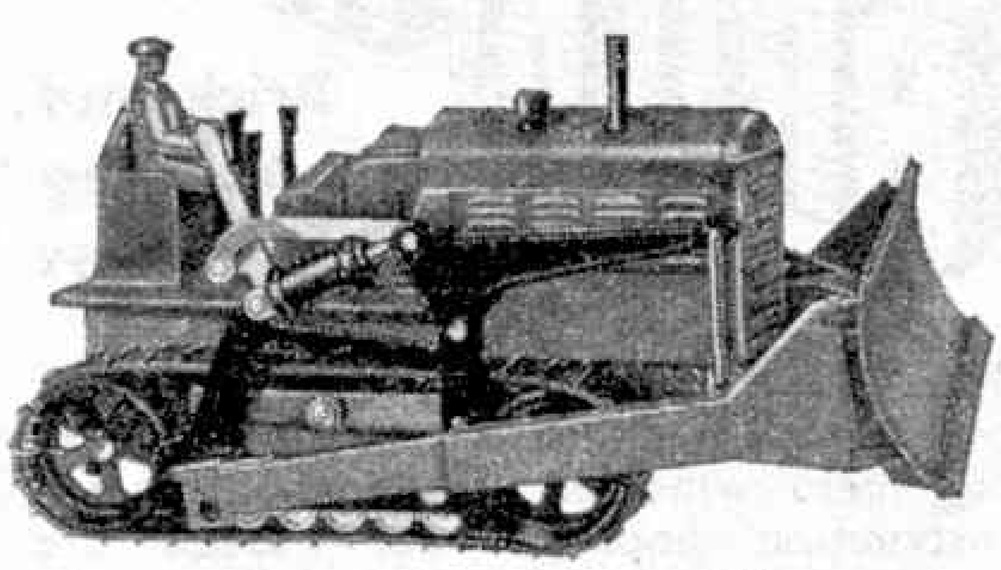


**Dinky Supertoys No. 571**
**Coles Mobile Crane**
This fine model of a mobile crane has hoisting, jib-raising and slewing movements.
Price **9/11** each

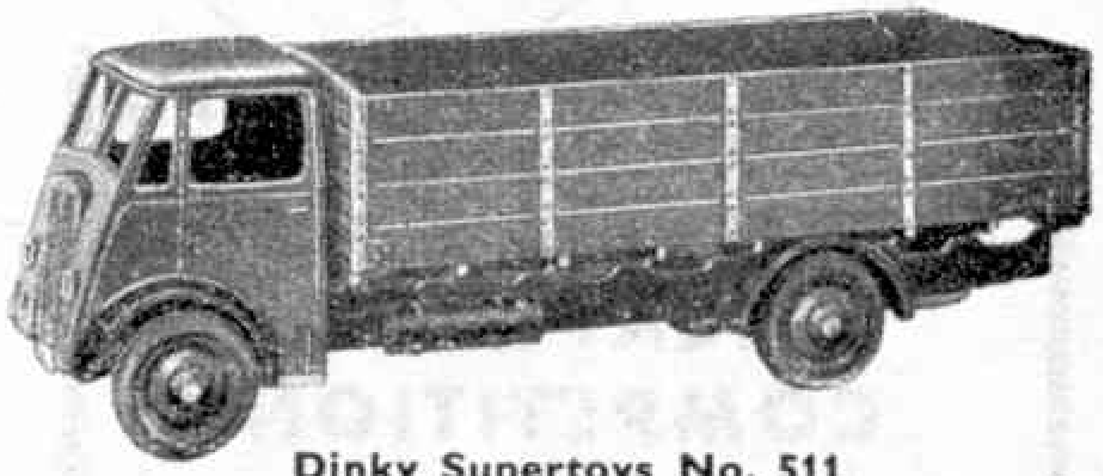
**Dinky Supertoys No. 514**
**Guy Van**
Large capacity van body, with opening double doors at rear. Price **5/8** each

**NEW**

**READY DURING THE MONTH**



**Dinky Supertoys No. 561**
**Blaw Knox Bulldozer**
This wonderfully realistic miniature runs on creeper track and the blade is raised or lowered by a lever.
Price **10/8** each



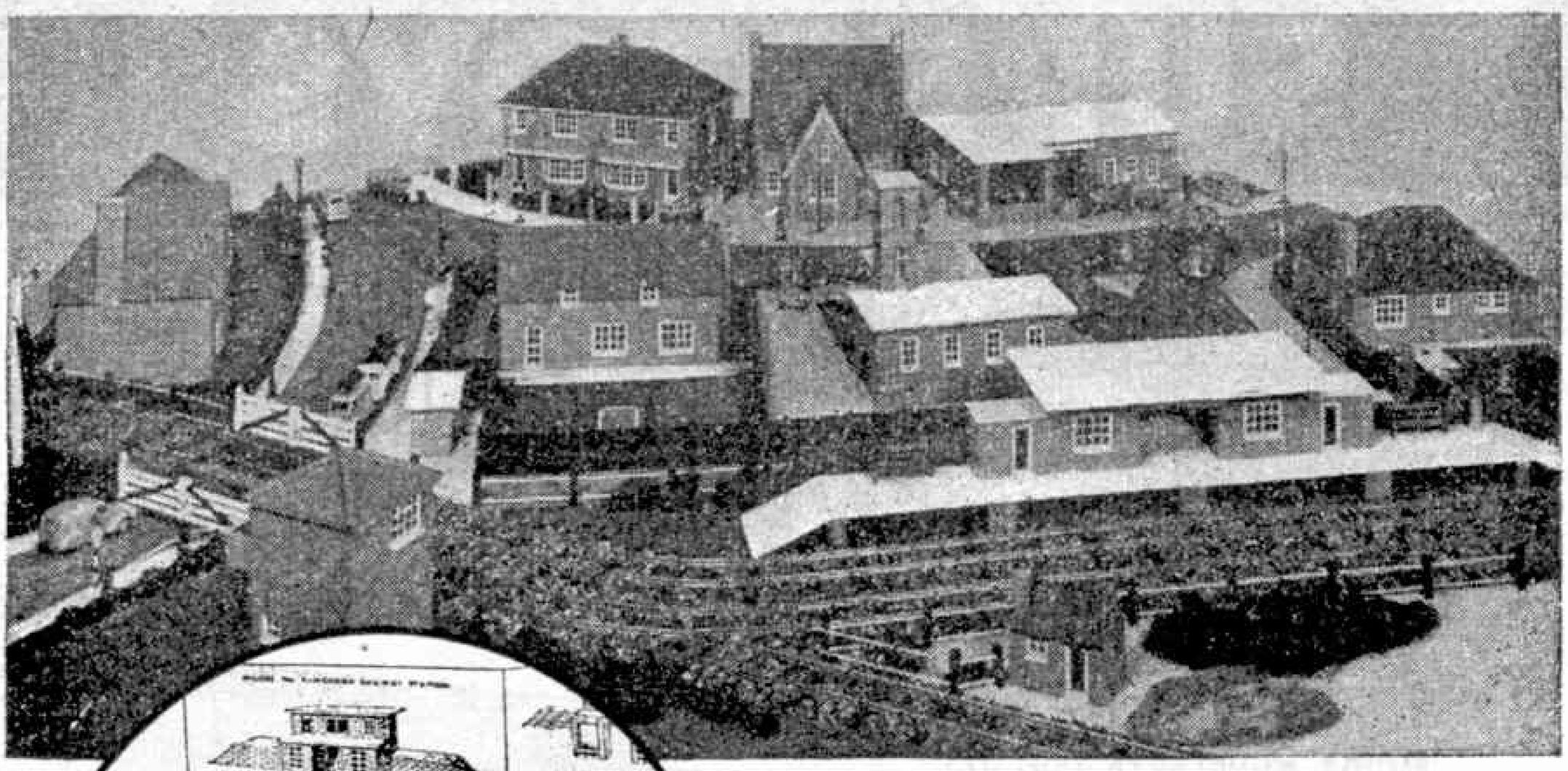
**Dinky Supertoys No. 511**
**Guy 4-ton Lorry**
Price **4/5** each.

**Dinky Supertoys No. 504**
**Foden 14-ton Tanker**
Price **8/6** each

**Dinky Supertoys No. 562 Dumper Truck**
Adjustable front wheels, tipping bucket, reversible driving seat.
Price **6/-** each

*All the above prices include Purchase Tax*

**MADE IN ENGLAND BY MECCANO LIMITED**



## ENTER FOR THE BRICKPLAYER COMPETITION

*Prizes of £10 10s., £5 5s., and £3 3s. and a number of consolation prizes of Brickplayer Accessories will be awarded for winning models. Write for full details.*

## Build this charming Model Village with

**Brick and Mortar Building Kit and Accessories**

The Brickplayer Kit contains miniature bricks in all required shapes, mortar, roofing, metal windows and doors, plans and instruction booklet. All models are architect designed to "0" gauge scale. Buildings can be permanent or dismantled by merely soaking in water, and the bricks used again and again.

Brickplayer Kits at 23/10 and 44/- and Accessories are available from good toyshops and stores.

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**Dept. "M" • Enfield • Middlesex**

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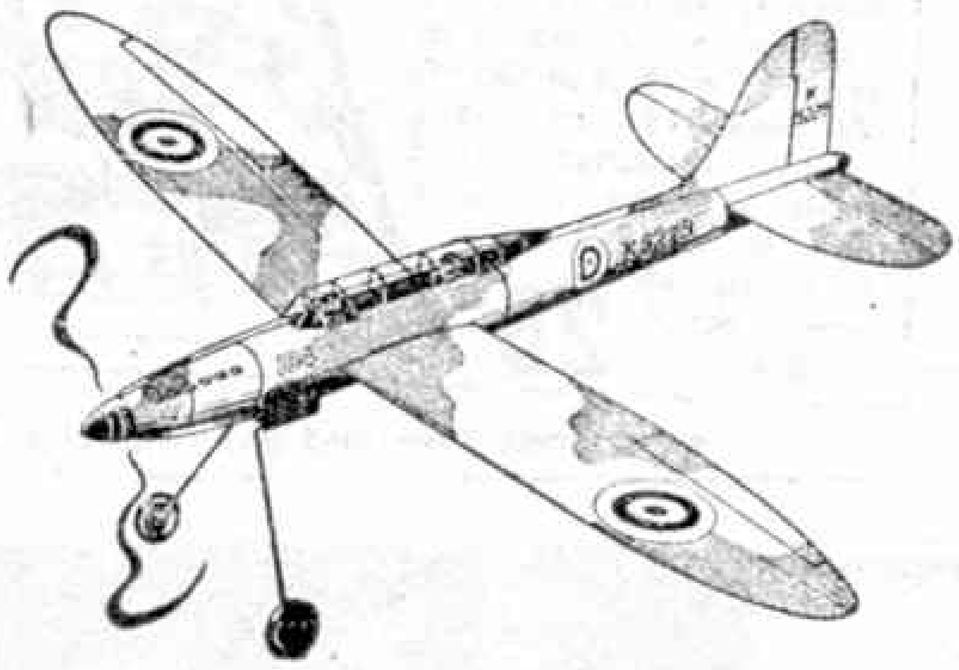
### Mk. V FIGHTER

A fine model of an R.A.F. Fighter with a terrific flying performance. Each model is supplied in the patent FROG high-speed Winder Box.

**SPAN—12"** **10'6**

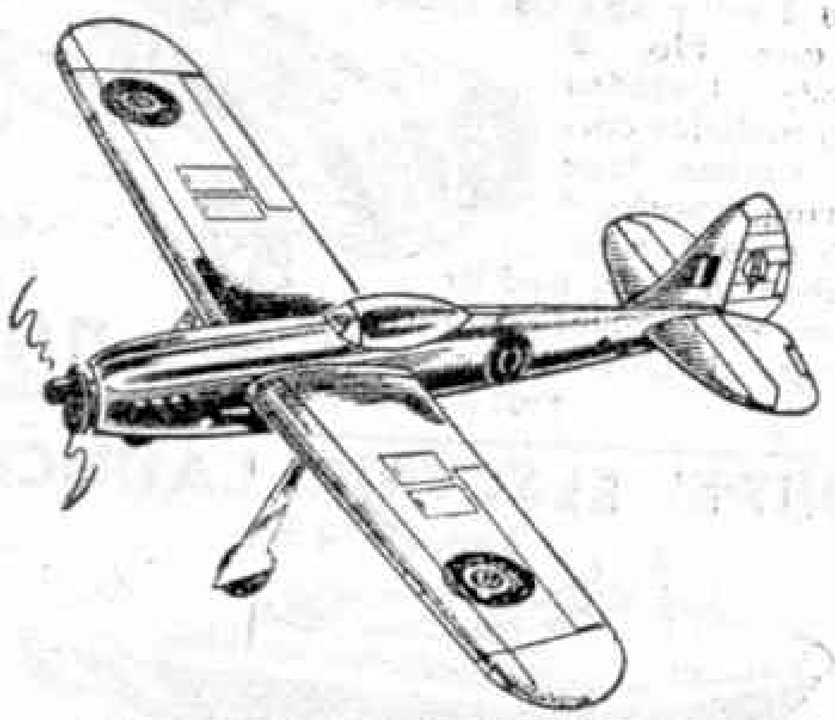


### "SPITFIRE"

A fine, near-scale model of the famous 'Battle of Britain' "Spitfire" fighter. It is neatly finished in correct camouflage colours and has a flying performance like the real thing.

**SPAN—17"** **8'3**

*Order from your local dealer— we cannot supply direct*



### "DIVE BOMBER"

A fast semi-scale model of an R.A.F. dive bomber. Suitable for the younger enthusiasts, the FROG 'DIVE BOMBER' will take off from the ground and fly for 300 ft.

**SPAN—20"** **10'6**

### "RAIDER"

Featuring the same method of construction as the larger "Dive Bomber" and "Spitfire" models, the "Raider" will take-off and fly for 200 ft.

**SPAN—12"** **3'11**

MADE IN ENGLAND BY

INTERNATIONAL MODEL AIRCRAFT LTD · MERTON · LONDON · SW · 19

# 'Xmas at GAMAGES
## TOY and MODEL DEPTS.

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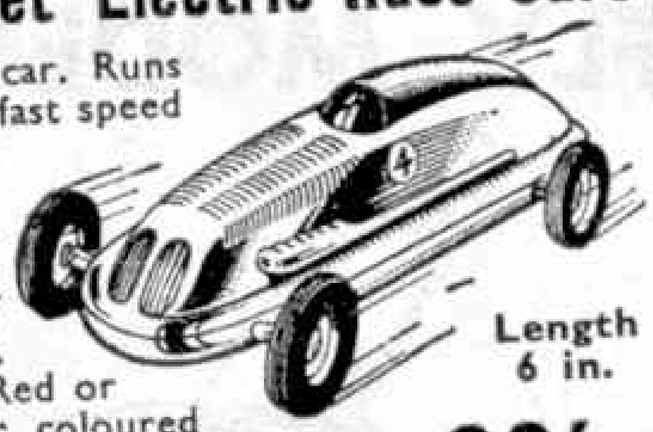
### 'Mighty Midget' Electric Race Cars



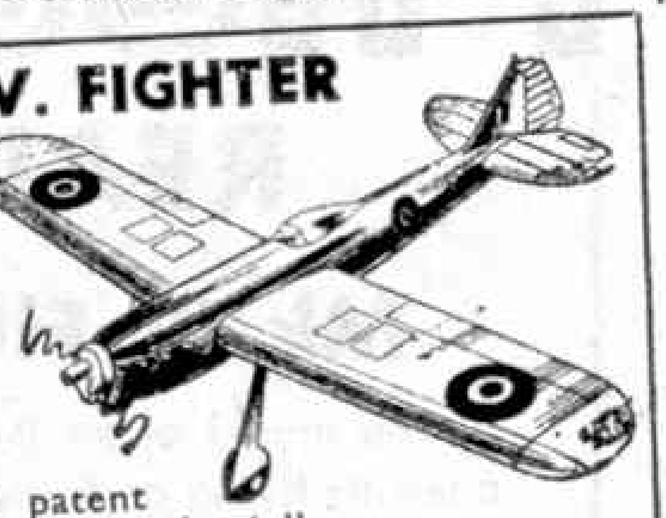
A superb little race car. Runs up to 3 miles at a fast speed on one No. 8 battery. Detailed finish includes correct tie-bar type steering, knock-off hub caps, etc. Finished in Blue, Red or Green with silver coloured fittings. No. 8 Battery 4d. extra

Length 6 in.

*Post and packing 9d.* **22/6**

### 'FROG' Mk. V. FIGHTER

12 in. Wing Span

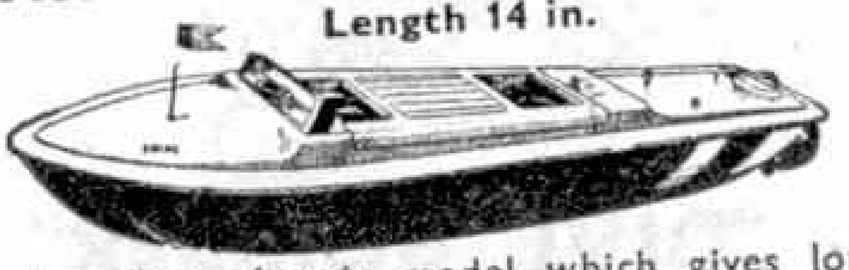


A fully finished flying model of unique design and construction. Almost crash-proof, it features, Aluminium fuselage, geared propeller and knock-off wings. In patent winder box, complete with fully illustrated Instructions.

*Post and packing 1/-.* **10/6**

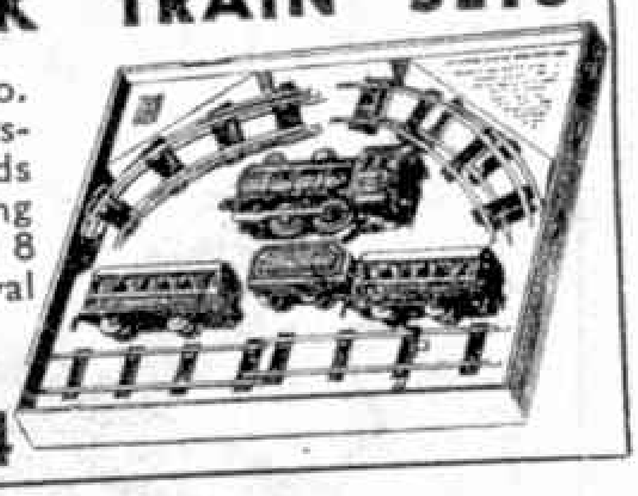
### 'SNIPE' ELECTRIC LAUNCH

Length 14 in.



Another fine electric model which gives long trouble-free runs on two U2 type batteries. All Aluminium hull finished gleaming Red/Cream or Blue/Cream enamel. Combined variable speed and stop lever. Batteries 10d. extra. *Post & pkg. 9d.* **18/6**

### FINE QUALITY '0' GAUGE
### CLOCKWORK TRAIN SETS



Brightly coloured Loco. Tender and two Passenger Coaches or Goods Wagons—15 in. long overall, together with 8 Rails forming an oval 27½ in. x 19½ in. In attractive box. *Post & packing 1/-* **28/4**

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# *The Modern Hobby for* MODERN YOUTH

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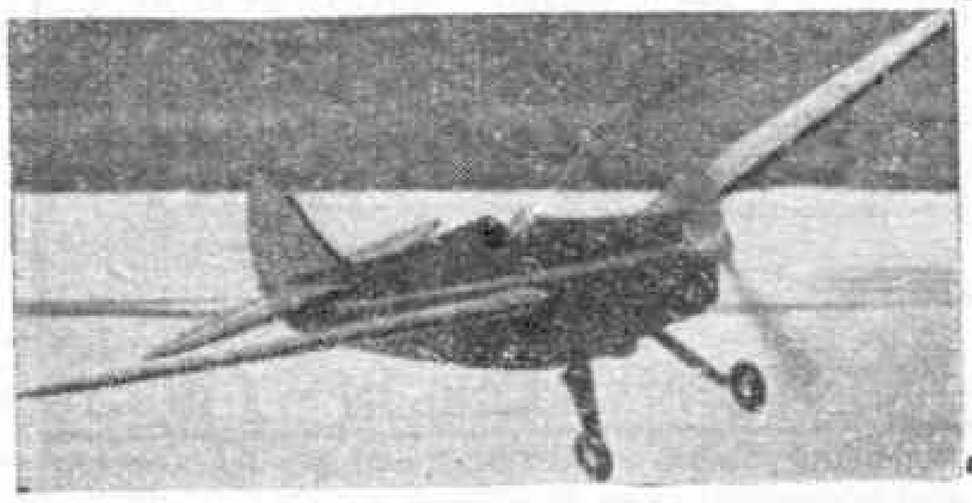
To encourage would-be aeromodellers to make a start, we will send you, FREE OF CHARGE, a copy of the 64-page "AEROMODELLER"—the monthly magazine for all who build and fly their own models. Fill up the coupon below and send with a 2½d. stamp postage for your copy.



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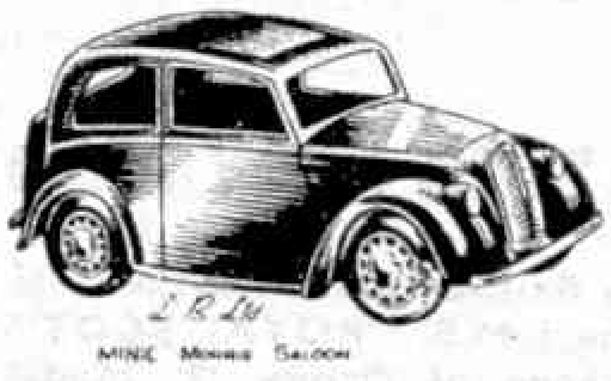
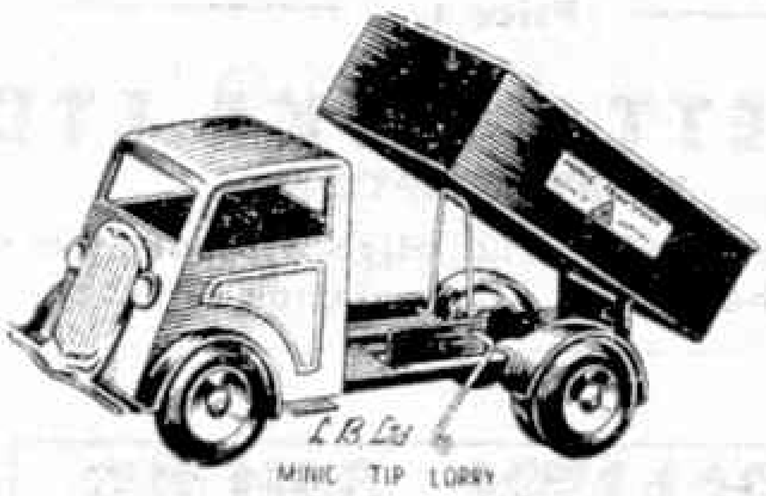
Tri-ang

REGD TRADE MARK

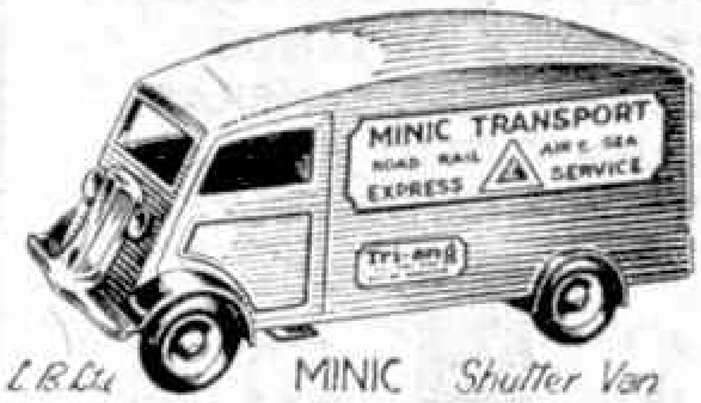


MINIC Mineur Saloon

MINIC P.O. TELEPHONE VAN



MINIC TIP LORRY




MINIC Shutter Van

# MINIC SCALE MODEL CLOCKWORK TOYS

The models illustrated here are just a few of the large range of Tri-ang MINIC TOYS now in the shops. Each car is fitted with a powerful clockwork motor for long runs, a brightly coloured metal or plastic body (correct in every detail) and rubber tyred wheels. Commercial vehicles have opening doors, tipping mechanism or realistic "loads" according to type. Ask at your local toy shop to see the full range.

MINIC LOG LORRY

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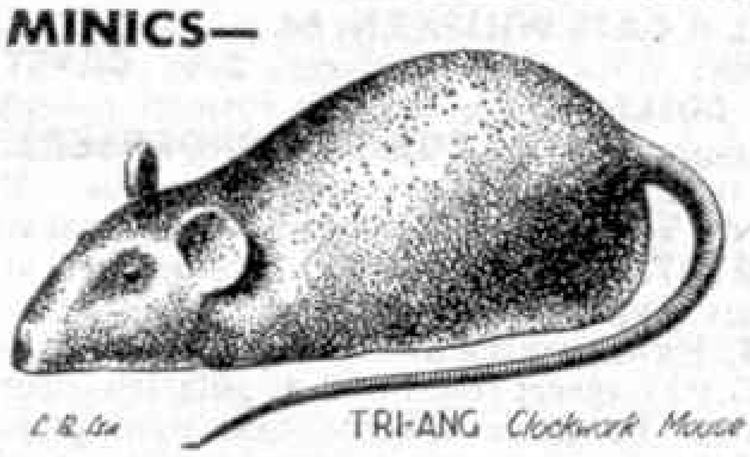
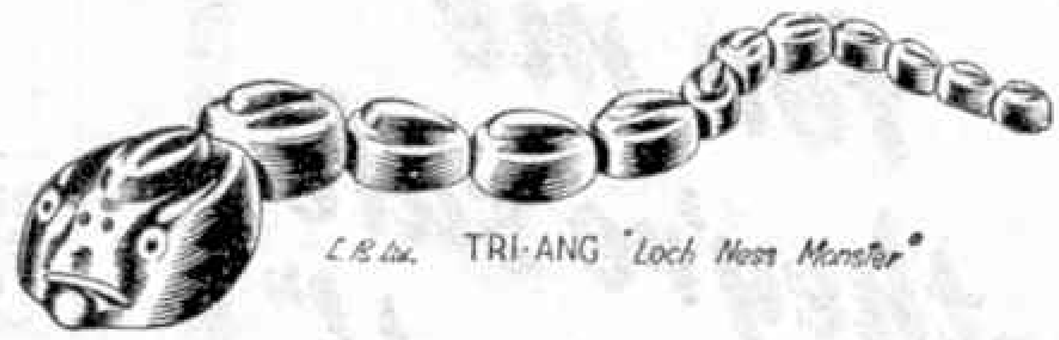


TRI-ANG Clockwork Mouse



TRI-ANG "Loch Ness Monster"

Two new clockwork novelty toys—guaranteed to cause hours of fun. The MINIC Mouse and the Loch Ness Monster really do look alive as they chase about the floor.

**OBTAINABLE AT GOOD TOY SHOPS— WE DO NOT SUPPLY DIRECT**

Tri-ang Toys

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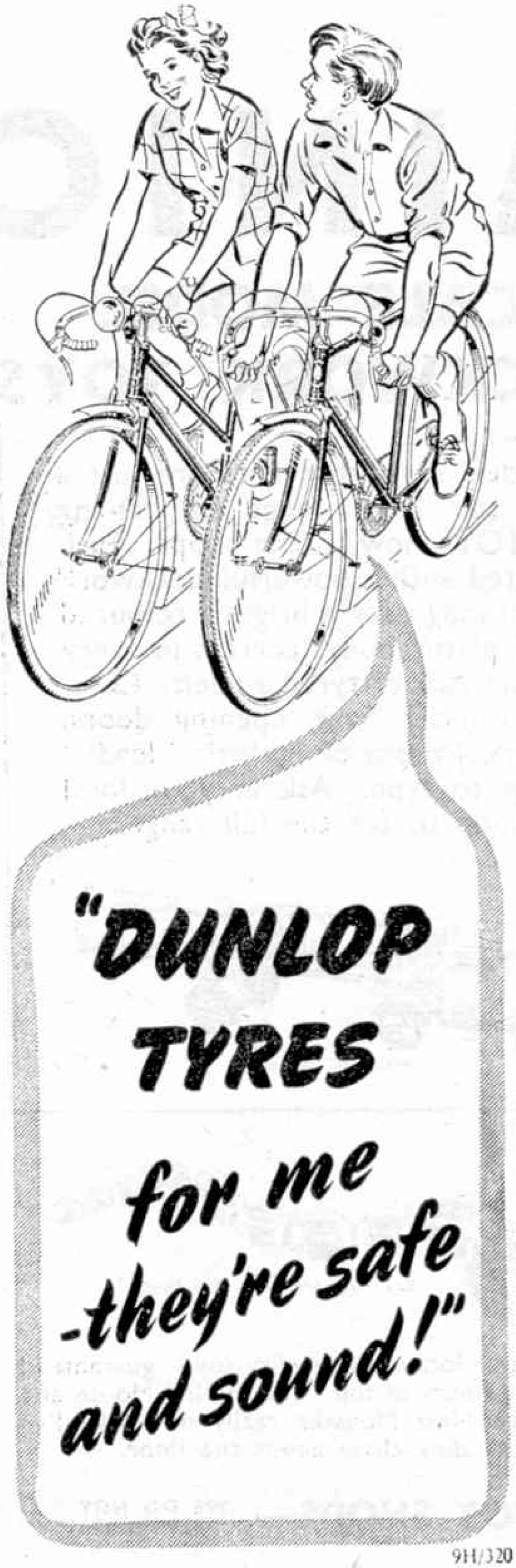
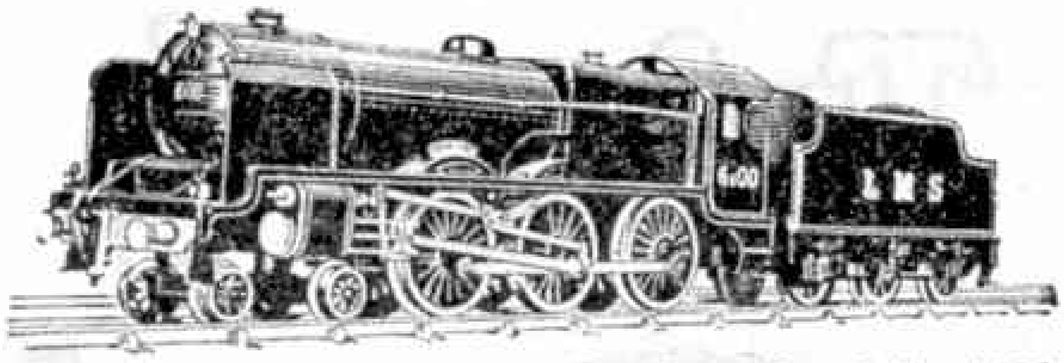
Tri-ang Toys




911/320




*L.M.S. "Royal Scot" No. 6100*

**FASCINATING NEW MODELS**

**This beautifully finished ready-for-the-rails Gauge '0' Model of the L.M.S. "ROYAL SCOT" is one of our new range of Gauge '0' Models now available with either clockwork or electric drive. It is also one of the most famous engines of this famous class. Price complete (Clockwork or Electric) £16.0.0, Purchase Tax £3.14.11.**

*Our Gauge '0' Model Railway Catalogue (MRC/17), containing further details of this and other locomotives together with complete lists of Gauge '0' components, will be gladly sent on application.*

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All prices inclusive of postage except where otherwise stated. Orders can be sent C.W.O. or C.O.D.
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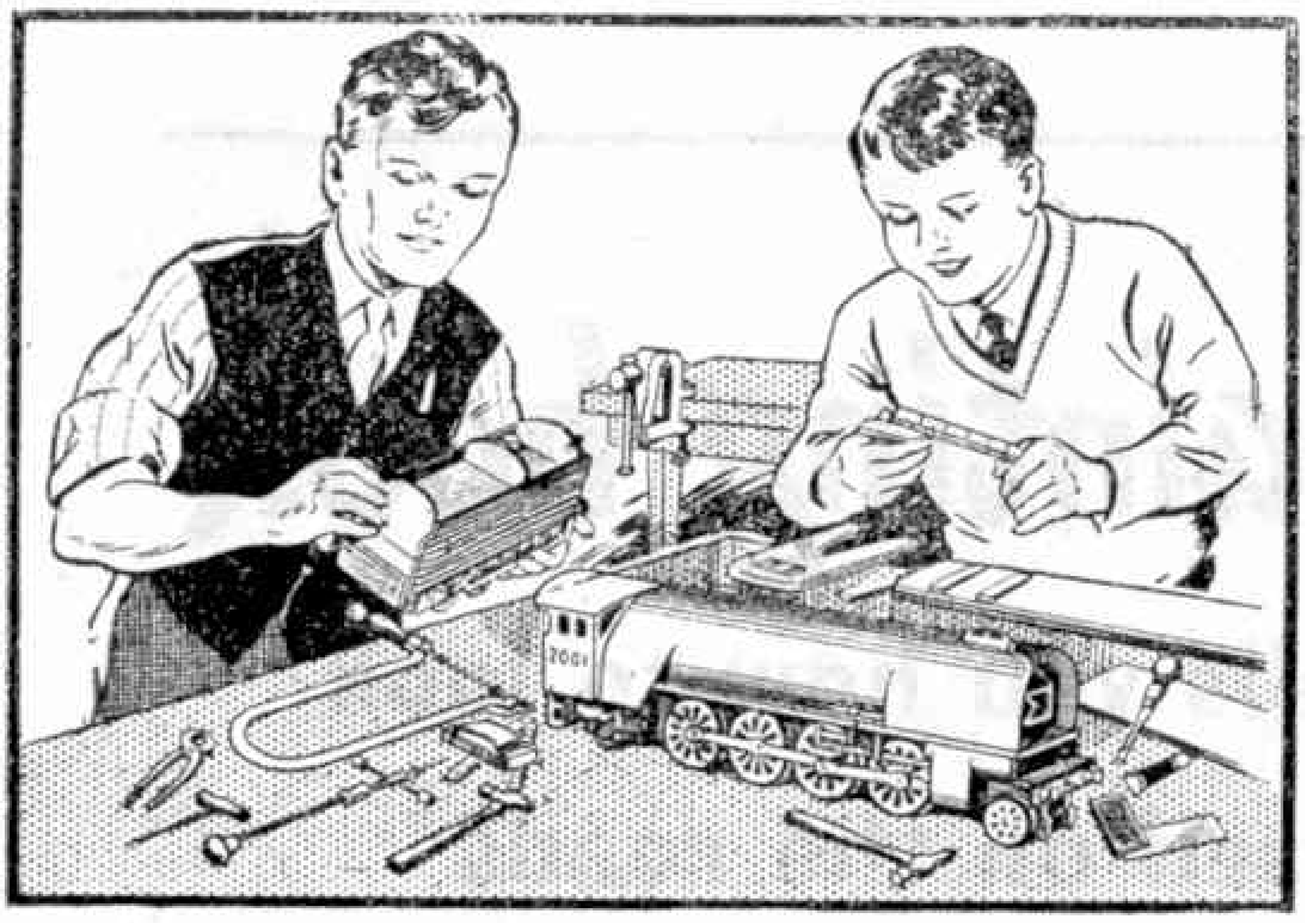

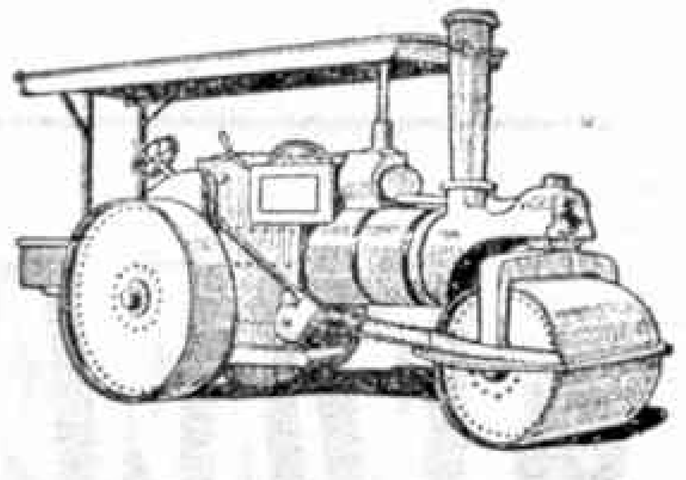

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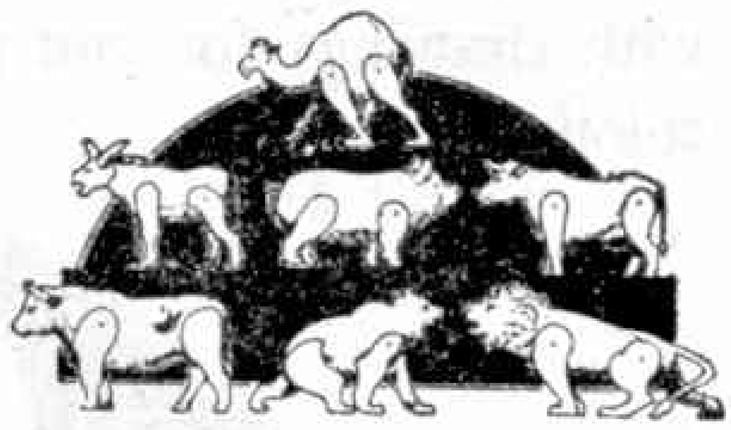

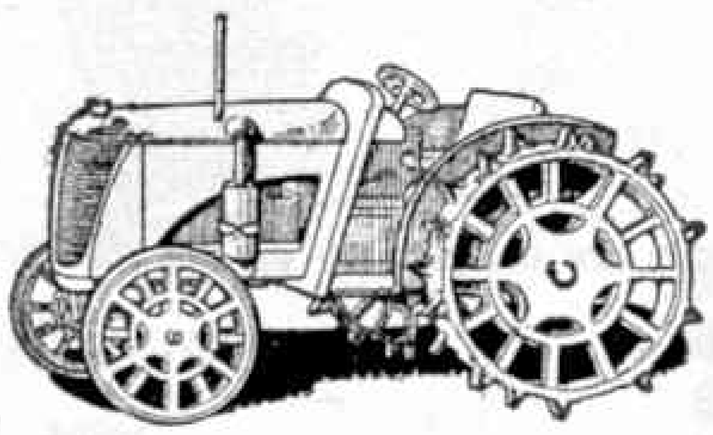

**MODELS — TOYS**

**FRETWORK**

**Complete Tool Sets from 9/-**

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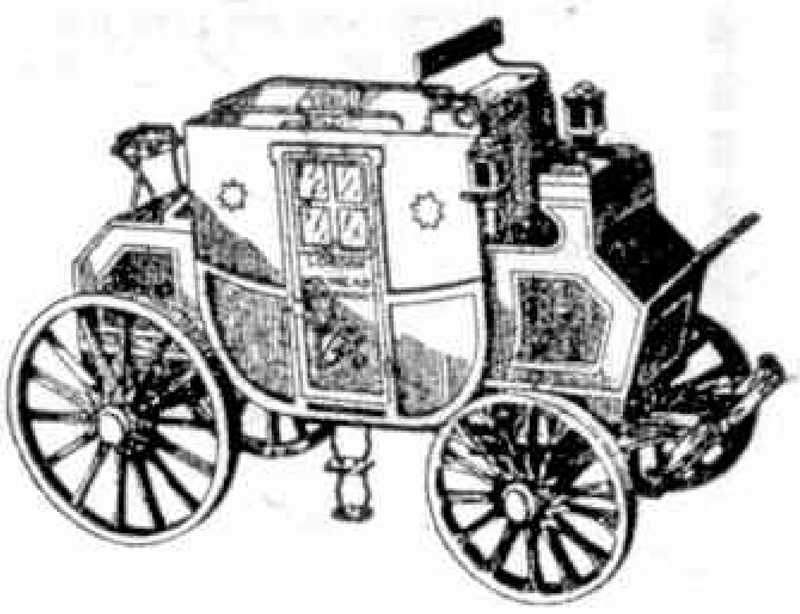

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**Dept. 31 Birmingham, 11.**

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**Next Month:** "SCIENCE AND CROP PROTECTION." By N. P. Harvey


# MECCANO MAGAZINE

Editorial Office:
Binns Road
Liverpool 13
England

Vol. XXXIV
No. 12
December 1949


## With the Editor

### Next Year's "M.M."

Since the War ended I have had very large numbers of letters from readers calling for more pages in the *"M.M."* I am glad to be able to announce that such an increase is now possible. This month's *"M.M."* is a special issue containing 16 more pages; and beginning with the January issue there will be a permanent increase of 12 pages each month. These extra pages will enable me to give more space to the regular features. Meccano in particular has suffered from lack of room in recent years, and I am looking forward to providing details of the larger and more interesting models that are in such widespread demand. The Hornby and Hornby-Dublo sections will also be enlarged and made more interesting. In addition I shall be able to include more articles on general subjects, of the type that I know readers like. During recent months I have been reluctantly obliged to decline several articles of outstanding interest by first-rate writers—simply because there was no room!

Now I have to make an announcement that is not so good. For many years, and of course particularly since the War, the cost of producing the *"M.M."* has increased steadily. The price of paper and the cost of printing have risen to such an extent as to alter the financial position very seriously. In spite of this I have so far been able to keep the price of the *"M.M."* at 6d., but unfortunately this is no longer possible. Starting with the January issue the price will be 9d. per copy. There will of course be a corresponding increase in the subscription rate, which will become 11/- for twelve months or 5/6 for six months.

I am very sorry to have to make this increase, but I am sure that readers will realise the absolute necessity for it, and will continue to give the *"M.M."* the splendid support they have given it in the past. I shall welcome any suggestions during the coming year for new features or for the improvement of existing ones.

In the meantime my staff and I wish every reader

**A Merry Christmas**

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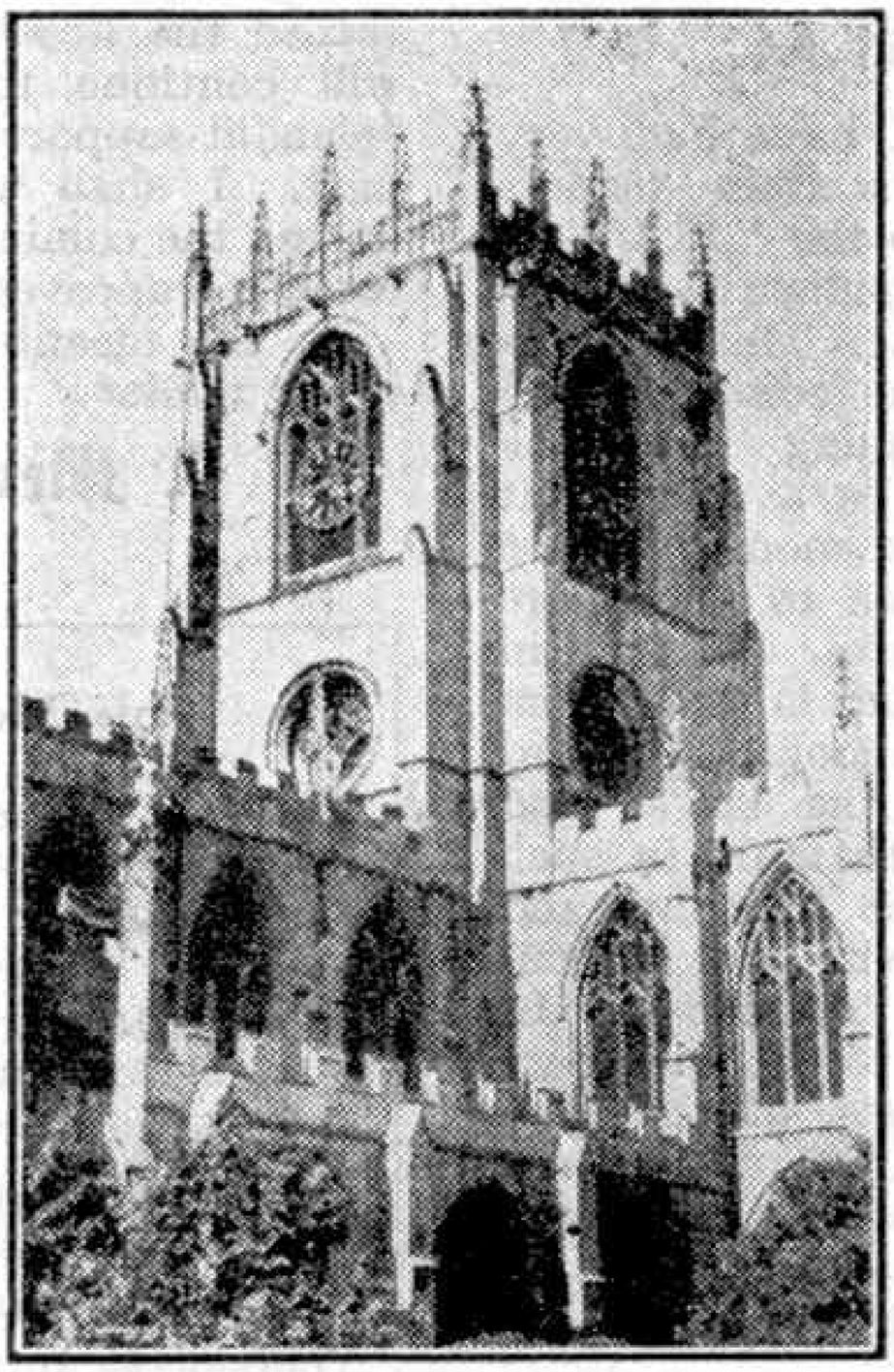
# Haunted Homes and Highways

By Arthur Nettleton

DO you believe in ghosts? Whatever your attitude towards them, the stories of Britain's spooky spots are at least entertaining, and Christmas is the traditional time to recount some of these tales.

Even in this scientific age, legends of supernatural happenings persist, and if some beliefs are to be accepted, the busiest places are not immune from the attention of phantoms. Central London is not excluded, and both the Tower and the Houses of Parliament are said to have spectres. A number of wraiths, in fact, are reputed to disport themselves in various parts of the Tower. Perhaps this is not very surprising, for the old building has been the scene of many tragic occurrences in real life.



St. Mary's Church, Beverley, which has a legend of a phantom coach.

Anne Boleyn, one of Henry VIII's ill-fated wives, was beheaded on Tower Green, and although there have been no reports of her walking near by with her head tucked underneath her arm, some queer events have been described from time to time. There is the tale told by a Captain of the Guard, who was making the rounds with a sentry. As they approached the chapel within the Tower, they were amazed to see that it was lit up. The chapel door was found to be locked, and the officer had no key, but he ordered his companion to bring a ladder so that he could climb up and peep through a window.

Then a cry of amazement came from him. A bluish-white glow lit the chapel, and in this eerie light he saw a procession of people walking slowly along the aisles. They were following a figure robed in Tudor dress, and the quaking soldier had no difficulty in recognising her as Anne Boleyn!

Then the light faded, and the chapel became dark and silent again, as though the wraiths had suddenly discovered that they were being watched.

If this were the only tale of uncanny happenings in the Tower, it might reasonably be dismissed as a hallucination. But there are several others. Some of the strange stories are actually confirmed by garrison records. For instance, there is the account of an unnerving affair in which three soldiers were concerned. Looking out of a window on a clear, moonlight night, two of them saw a white figure approaching one of the sentries outside. They heard him challenge the intruder, and saw him charge with fixed bayonet when no reply was given. They also saw him thrust the bayonet right through the figure and run full tilt into the Tower wall before he fell to the ground in a dead faint.

The incident was followed by a court-martial, but the sentry's story was so convincingly supported by the two witnesses that he was acquitted. Indeed, the ghost was subsequently seen on so many occasions that the spot acquired an evil name. Was the phantom that of Lady Jane Grey, another unfortunate victim beheaded on Tower Green, or was it the ghost of Guy Fawkes, who is believed to have been tortured in the Tower?

The Houses of Parliament have a less sinister spectre, the wraith of an old man who arrives in a rowing boat. But who he is, and where he comes from, nobody knows, though there is a tradition that his arrival always coincides with some big national crisis.

The ghost of Guy Fawkes, already mentioned in connection with the Tower, must be pretty active, since it is said to haunt places far removed from London

as well. Scotton, a village in Nidderdale, is among them. The arch-rogue of the Gunpowder Plot—or the scapegoat of the conspiracy, as some people regard him—was born at York, but his boyhood was spent at Percy House, Scotton. For a long time after his execution the villagers refused to believe in his guilt, so perhaps it is appropriate for his wraith to haunt the lanes near his boyhood home, as some Scotton folk say it does.

Northern England has many other ghost tales. There is the spectre of Temple Newsam, the great mansion now owned by the citizens of Leeds. It was the birthplace of Darnley, husband of Mary Queen of Scots, and his murder in 1571 has given rise to the tradition that he sometimes returns to Temple Newsam. A ghost hunt was organised to "lay" this phantom a few years ago, and although the spectre was not obliging enough to turn up, this does not necessarily mean that the story is untrue.

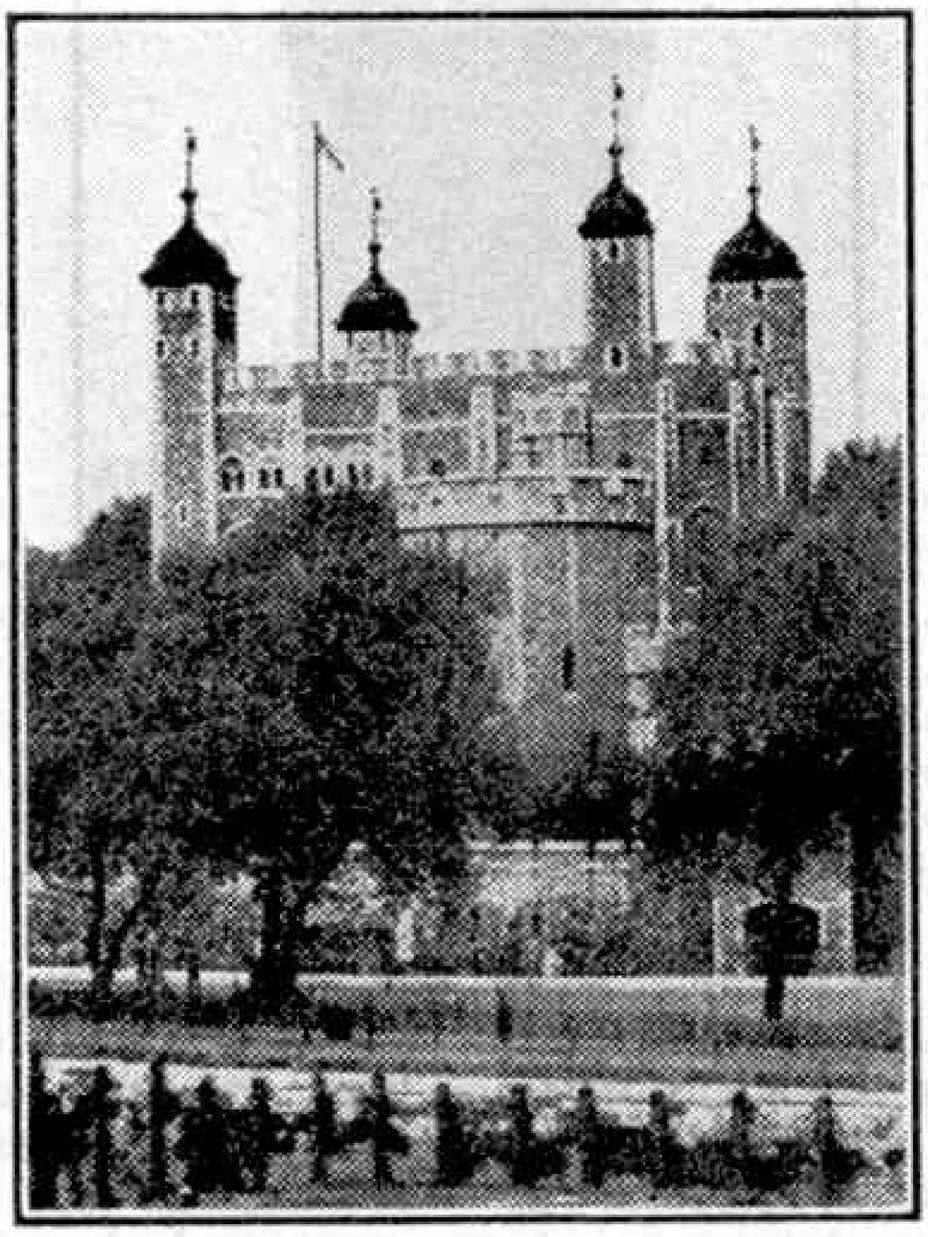
**Burton Agnes Hall, near Driffield, in which a screaming skull is preserved as a souvenir of ghostly tradition.**

An entirely different kind of apparition haunts Burton Agnes Hall, near Driffield, and here there is more evidence to support the tale.

In a niche inside the Hall is preserved a skull. This gruesome souvenir belonged in life to the daughter of the first owner of the Hall. That was the 17th century, and when the girl was attacked by a tramp and seriously injured, it was plain that she would linger only a few days. But before she died she extracted a promise that her head would be kept in the house for ever.

On one or two occasions the head has been removed, and in each instance the removal has been followed by extraordinary incidents. Doors have banged continuously without visible cause, and weird noises have been heard. The commotion has always ceased as soon as the skull of "Nance," as the villagers call her, has been restored to the house. So to-day it is kept there, and there seems little likelihood of its being taken away again, lest the unseen phantom should return and cause trouble.

Both famous folk and nonentities haunt other places, if legend is reliable. There is the bomb-damaged St. Michael-Pater-Noster-Royal Church, near Cannon Street, London. Its wraith is that of no other than Dick Whittington. He was buried in the church in 1423, and he slept soundly there until the Nazis seriously damaged the building and made it unusable. Nowadays, say some Londoners, the youth who thrice became Lord Mayor roams the vicinity at night, awaiting the restoration of the church.



**The ghosts of the Tower of London number more than a dozen, and the stories of two of the Tower's strangest visitations are told in the accompanying article.**

Beverley, the old market town near the Yorkshire Coast, provides an example of a much less-known spook. It is the phantom of a valet named Jocelin, who was (Cont. on page 473)

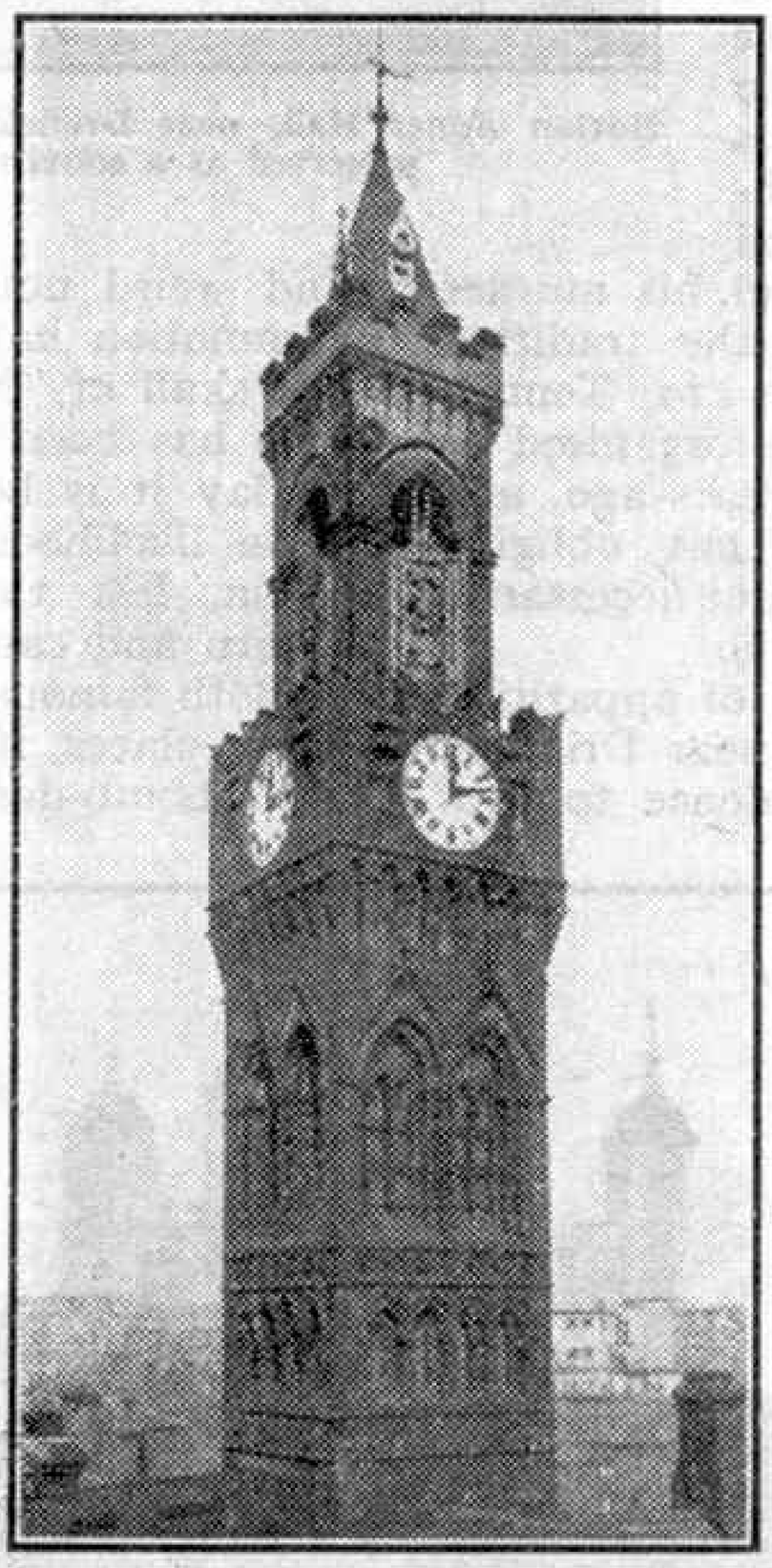
# The Great Clock of Bradford

## A Notable Electrical Timekeeper

By T. R. Robinson, F.B.H.I.

THE largest and most powerful clock and carillon machine to be installed in England for a number of years is that now at work in the tower of the Town Hall at Bradford, Yorkshire. Quite apart from its great size, the clock is unusually interesting, for it replaces an older clock erected in the tower by the same makers just over 75 years ago, and operates the dials and bells that were used by the earlier timekeeper.

The contrast between the old and new clocks is a remarkable illustration of the way in which **modern electrical** mechanism has taken the place of the massive driving weights used in the past, and in so doing has simplified upkeep and maintenance. The old clock was a large machine, of the kind still to be found in hundreds of church and town hall towers. Its timekeeping, chiming, and striking sections were all grouped together in one large "flat-bed" frame, each set of wheels, or "train," being driven by a heavy weight. The carillon machine was also weight-driven, and as the four weights totalled over three tons, and required to be wound up daily, the work of keeping the installation going took up a lot of time.



**The clock tower of Bradford Town Hall, showing the great 10 ft. 6 in. dials.**

During its three-quarters of a century of service, the old clock and carillon machine had become considerably worn, and this, together with the difficulty of arranging for daily winding, led to the decision to replace the whole mechanism with one of modern design. The scheme selected was to divide the mechanism into separate units, each controlled and synchronised by impulses transmitted from a master clock at half-minute intervals.

The powerful drive needed for operating the large and exposed hands is provided by the "timepiece" unit, consisting of a train of four wheels and pinions, driven by a weight of 4 cwt., equipped with automatic re-winding mechanism. This weight hangs from one loop of an endless length of roller chain, and drives the timepiece train by means of a large sprocket wheel mounted on the first spindle. At the top of the opposite end of the loop the chain passes over a smaller sprocket wheel, used for re-winding the weight, and the rest of it forms a second loop that hangs idly between the driving and re-winding sprockets. On this idle loop is hung a small weight, which steadies the chain and ensures that it follows the sprockets correctly.

The ratios of the wheels and pinions of the timepiece train are so chosen that the third wheel makes one half-turn while the train is advancing the hands on the dials one **half-minute space.** Mounted on the same spindle as this third wheel is a double-ended locking arm, the tips of which can engage in turn with an electro-magnetically released trigger lever, the magnet of which is energised by the master clock impulses every half-minute.

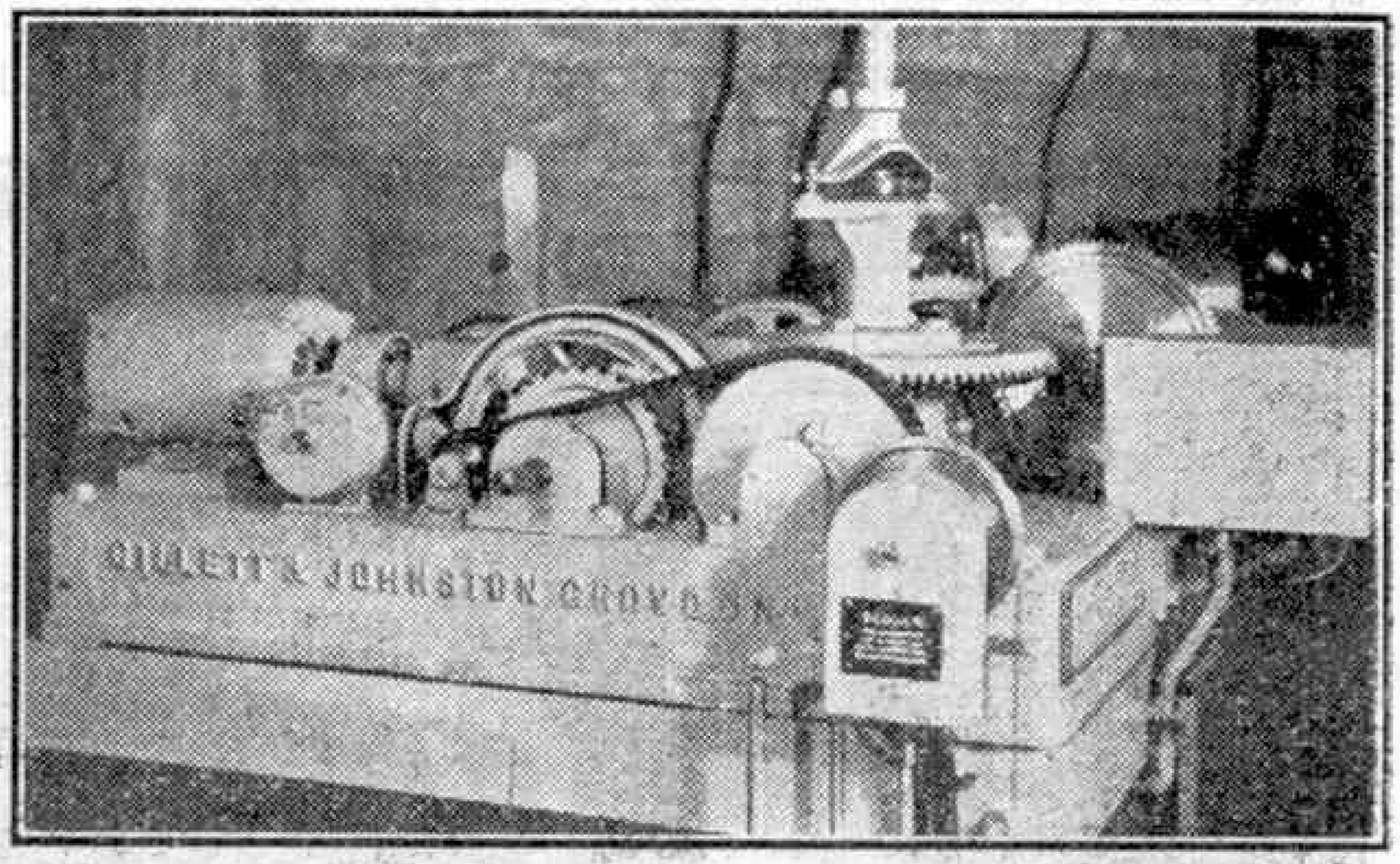
When the timepiece is operating, the weight drives the train at a controlled speed until one of the tips on the locking arm comes to rest on the trigger lever. This action then locks the train, and it remains at rest until an impulse from the master clock trips the trigger, unlocking the tip of the arm, and so allowing the weight to drive the train again. This continues until the tip of the other

end of the locking-arm engages with the trigger lever, whereupon the whole process is repeated.

The speed of the time train is controlled by an air brake, mounted on the final spindle. This is so adjusted that the train moves forward a step of half a minute in approximately 25 seconds, giving a pause of about five seconds between locking and releasing, and ensuring that the master clock and timepiece do not get out of step.

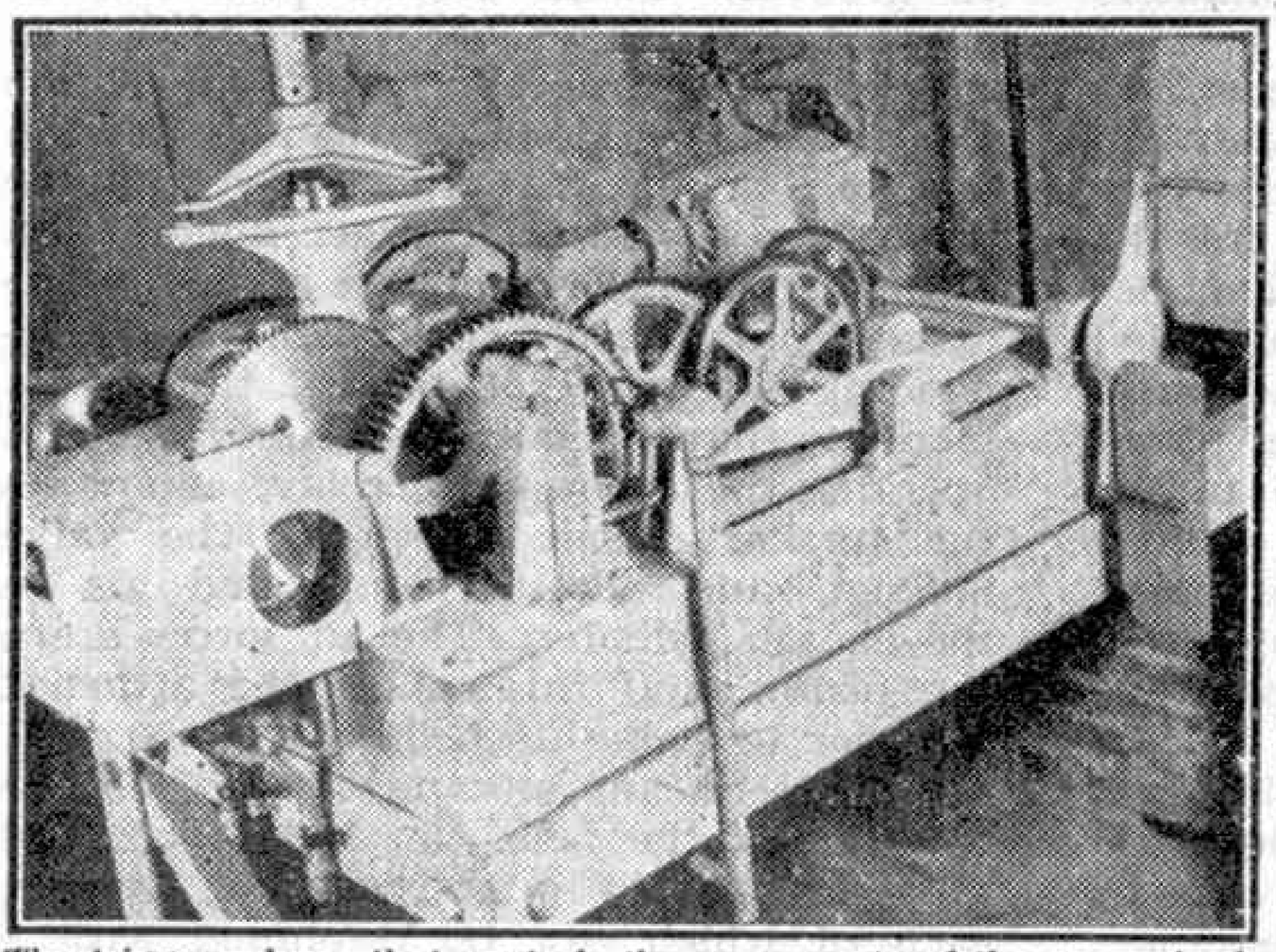
The main wheel of the timepiece is linked to the spindles of the hands by bevel wheels and a long vertical spindle, which leads upward to a group of bevel wheels in the dial room. In addition to operating the hands, the timepiece also controls the contacts that switch in the chiming and striking units and the carillon machine at the proper instants.

The automatic re-winding of the weight which drives the timepiece is most ingenious. When the running of the timepiece has caused the weight to descend to a certain pre-set point, a switch is tripped and the winding motor is started up. The motor, driving through reduction gear, then rotates the winding sprocket and so raises the weight without interfering with its drive to the timepiece. As soon as the weight has been fully re-wound it breaks the motor circuit, and the winding mechanism stops until it is again needed. An extra safety-switch is fitted to prevent any damage to the mechanism if this switching action should ever fail to cut off the current. This is tripped as soon as the weight is raised above its normal highest level, and once operated it not only locks itself in the "off" position, cutting off all current to the motor, but also sounds a loud alarm in the attendant's room. The winding mechanism then remains out of action until the safety switch has been unlocked, so a failure cannot pass unnoticed.



**Winding side of the timepiece unit of the Bradford Town Hall clock. The chain that carries the driving weight is visible.**

To provide for power failures the weight is able to descend well below its normal lowest level, and this gives the timepiece a reserve run of four hours to meet possible emergencies. If even this should prove insufficient, hand winding is provided for, and an alarm bell is sounded automatically if this becomes necessary.

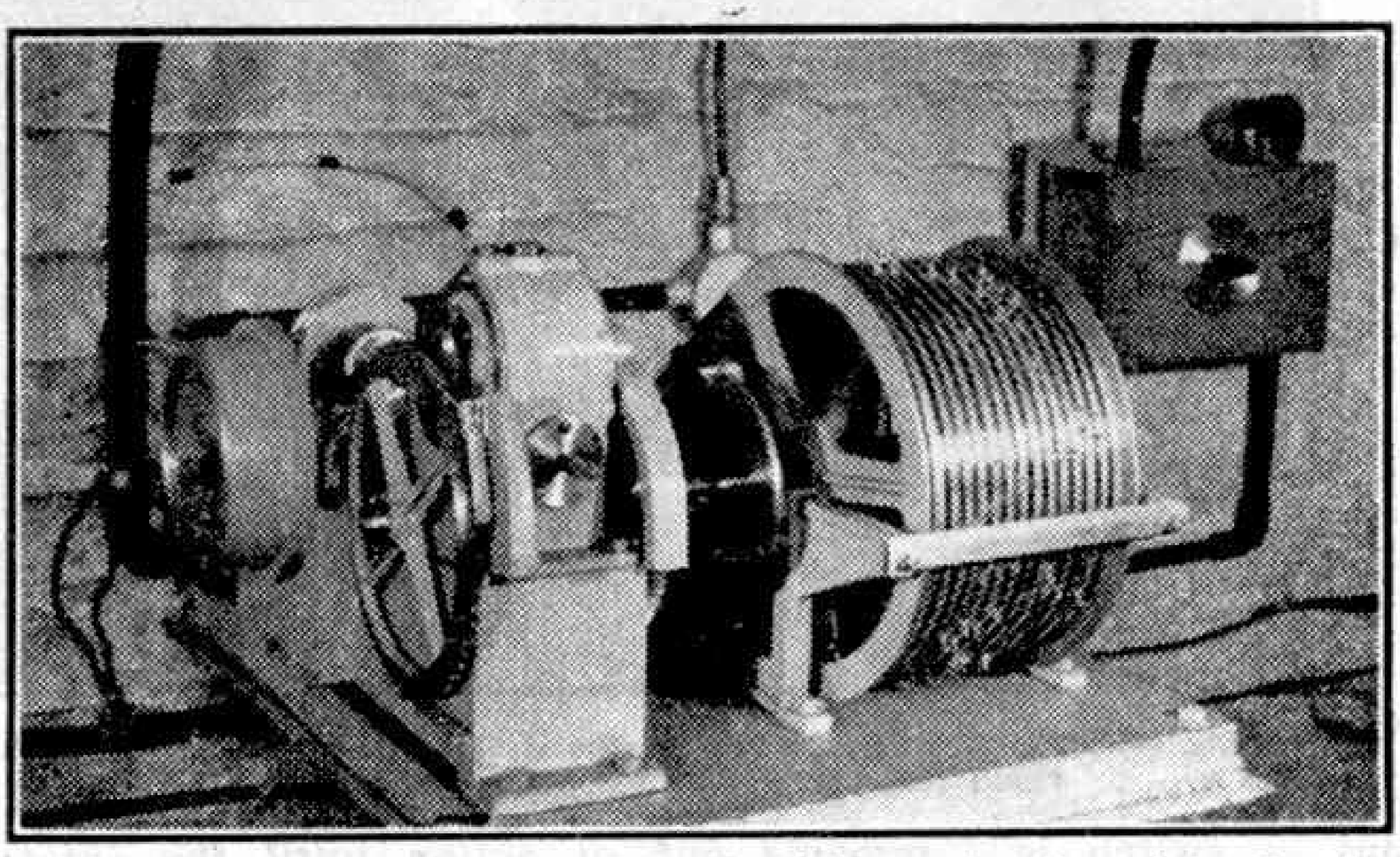


**The trigger release that controls the movements of the gear wheel of the timepiece unit is seen in this view of the clock mechanism. On the right is the air brake.**

The chiming and striking units resemble one another in general construction. Each is driven by a 1½ h.p. motor, which is coupled to an enclosed worm reduction gear through a centrifugal clutch, which enables the motor to start up under "no load" conditions and to pick up its drive steadily as its speed increases. The spindle of the worm wheel carries a pinion that engages with a large spur gear, and, in the case of the quarter chiming unit, a second pinion on the spindle of this gear engages

with a further spur gear on the spindle of the quarter chime cam barrel. The striking unit is without this second stage of spur reduction gearing, the large spiral cam which operates the striking hammer lever being fitted to the spindle of the first spur gear.

When the timepiece closes the contact that controls the chiming or striking unit, a rocker switch on the appropriate unit is tripped and its motor is started up. Then, as each group of notes at the quarter or the blow of the hour is sounded, a small cam on the spindle of the first gear wheel steps a "count-wheel" forward, tooth-by-tooth, until the chiming or striking is completed. At this moment a pin on the count-wheel trips the rocker switch back, and so stops the motor driving the unit.



**The carillon machine. The barrel on the right can be changed to alter the tune rung out on the bells.**

Both the quarter and hour hammers are of very unusual construction. Instead of being mounted outside their bells, and falling by gravity when released, they are fitted inside the bells and are linked to a group of powerful coil springs. As the cams on the units depress their hammer levers, they tension these springs and then, at the moment when the cams disengage from their levers, the power stored in the springs is delivered to the hammers, causing them to move smartly upward against their bells. This novel method of operation has been found to give better striking and more crisp action, producing a better note from the bell.

The carillon mechanism is of the most modern electro-pneumatic type. The tower contains 13 bells, and each is now fitted with an internally mounted hammer, linked by a wire rope to a piston in a pneumatic cylinder. The compressed air used to operate the pistons is at a pressure of 40 lb. per sq. in., and is provided by a two-cylinder compressor, driven by a 3 h.p. electric motor. As the compressor is quite capable of maintaining full pressure there is no need for any storage reservoir, an ample supply of air being contained in the three-inch distribution pipe and the air spaces in the bases of the groups of cylinders.

The entry of air to each cylinder is controlled by an electro-magnetic valve, and the circuits of the valve magnets are completed by a set of relays of the Post Office type. The relays themselves in turn are operated from the carillon machine, which resembles a small copy of the chiming and striking units. A fractional horse-power motor drives through a belt and pulleys to a worm reduction gear, and this gear rotates the spindle of the carillon barrel through a stage of spur reduction gearing. A neat coupling enables any one of a number of barrels to be fitted to the machine, and the replacement of one barrel by another is almost as simple as the changing of a gramophone record.

The barrels consist of bronze drums, around the circumference of which are 13 grooves. Small bronze pins can be inserted into these grooves, and locked at any position necessary to provide the selected tune. Mounted on the carillon machine, in line with the grooves on the barrels, is a bank of contact fingers, and as the drum rotates a pin set in any groove makes contact with the tip of its corresponding finger as it passes, thus completing that particular circuit. This operates the appropriate relay, completes the further circuit energising the valve magnet, and admits compressed air to the chosen cylinder. The air forces down the piston, and this causes the attached hammer to strike its bell.

By this means any melody within the compass of the bells can be played, and as there are 14 interchangeable barrels, each of which can be re-pinned with a fresh tune when required, an almost infinite variety of

(*Continued on page 469*)

# General Repairs

By "Shed Superintendent"

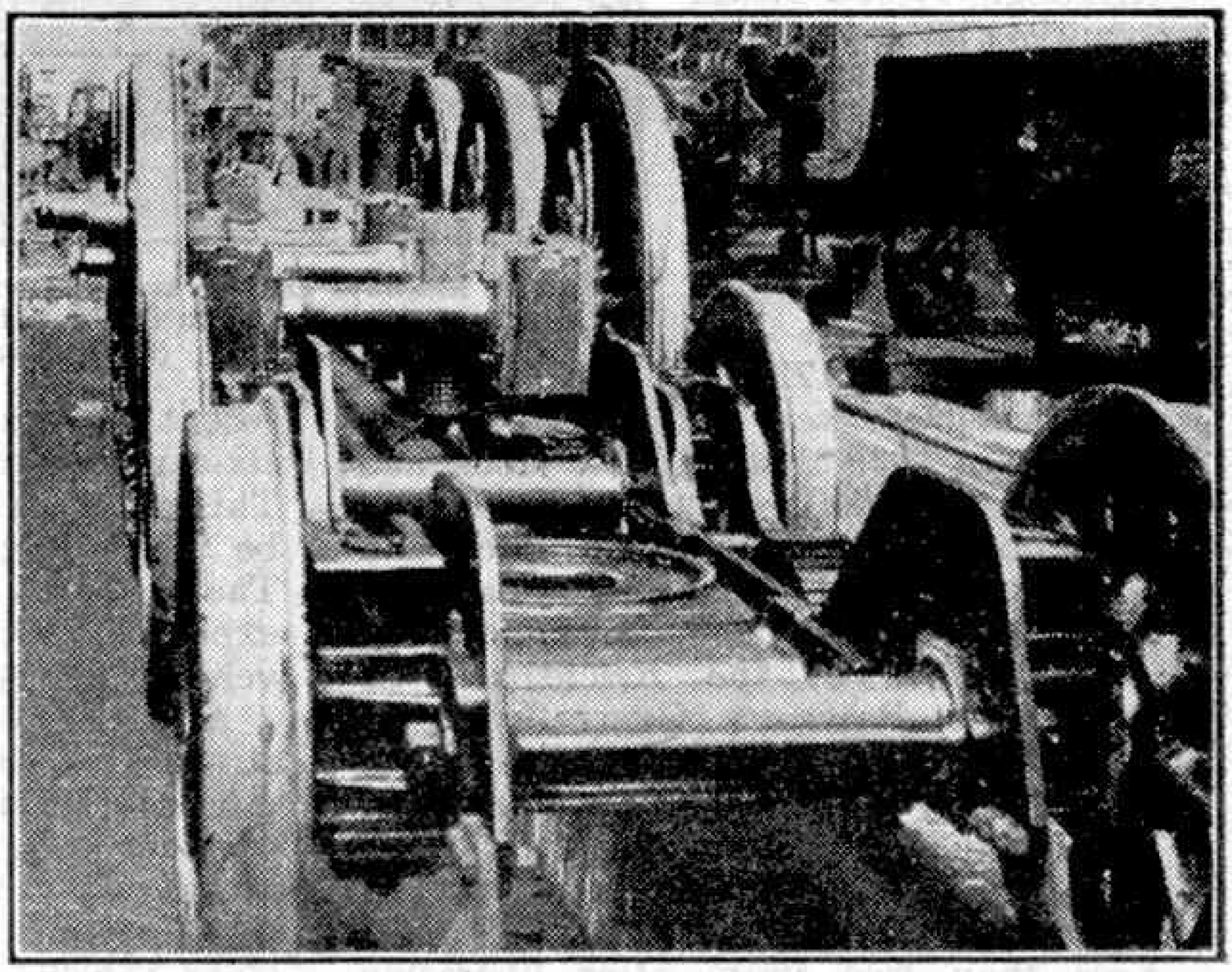
THE cover picture to this month's issue shows one of the Southern Region "West Country" class 4–6–2s undergoing the process of Works overhaul. A locomotive requires a complete overhaul, known as a general repair, after running 80,000 to 100,000 miles. An express locomotive may run this distance in less than two years; a shunting engine will take five or six years to complete the same mileage. The workshop capacity in each Region is of course limited and only a certain number of general repairs can be undertaken per year. Careful planning is therefore necessary to ensure that when locomotives become unfit for service, they can be accepted by the Works without deferment, if the general standard of mechanical condition of the engines in service is to remain satisfactory.

During the war repairs had to be deferred because the workshops were engaged on other work. Consequently engines rattled along to a merry tune from knocking big-ends and worn axleboxes, and the drivers sang out *"Any Old Iron."* At the end of the war the fleet of engines at work on the railways had been reduced to such a state that even now, after four years, it cannot be said that all the arrears of repairs have been overtaken. It takes a long time to repair 20,000 locomotives.

Since the formation of British Railways, a standard system of planning repairs to locomotives has been instituted. A central bureau on each Region keeps up-to-date records of the condition of every engine in service, by means of regular reports from the Motive Power Depots. These reports are made at agreed intervals according to the type of engine. A "Pacific," for example, is examined and reported at the end of twelve months after receiving general repairs. As the mileage of the engine increases, so the time interval between reports decreases, to maintain a close watch on the approach of the next impending overhaul.

The central bureau is able to keep the condition of the whole locomotive stock under review and can forecast the number of general repairs that will become due on a given date. This in turn allows a constant flow of work to be scheduled for the workshops, to keep them steadily employed at all seasons of the year. A considerable degree of foresight can be exercised in overhauling passenger locomotives in preparation for the Summer holiday period, for example. Engines of special types, such as Docks Shunters, must be withdrawn in rotation since they cannot be replaced temporarily by engines of other types. Engines surplus to requirements can be stored, after general repairs, to meet seasonal demands.

No doubt as unification of the railways develops, together with a reduction of the number of different classes of engine, it will be of advantage to pool the resources of all the railway workshops, so that an engine that cannot be accepted at one works can be switched to another. For the moment, each Region is independent, although the construction of new engines is being shared between the Regions.



**The bogie and driving wheels of a 4-6-0 awaiting the engine after general repairs have been completed**

# The Railways of France

## Some Remarkable Reconstruction Feats

IN 1939 the railways of France, which had become a unified system under the State a year or two previously, enjoyed a high level of technical efficiency. Owing to the effects of the war and of the occupation of their country by the enemy, the S.N.C.F., to quote the now familiar initials denoting the National system, found itself facing tremendous problems on liberation in 1944.

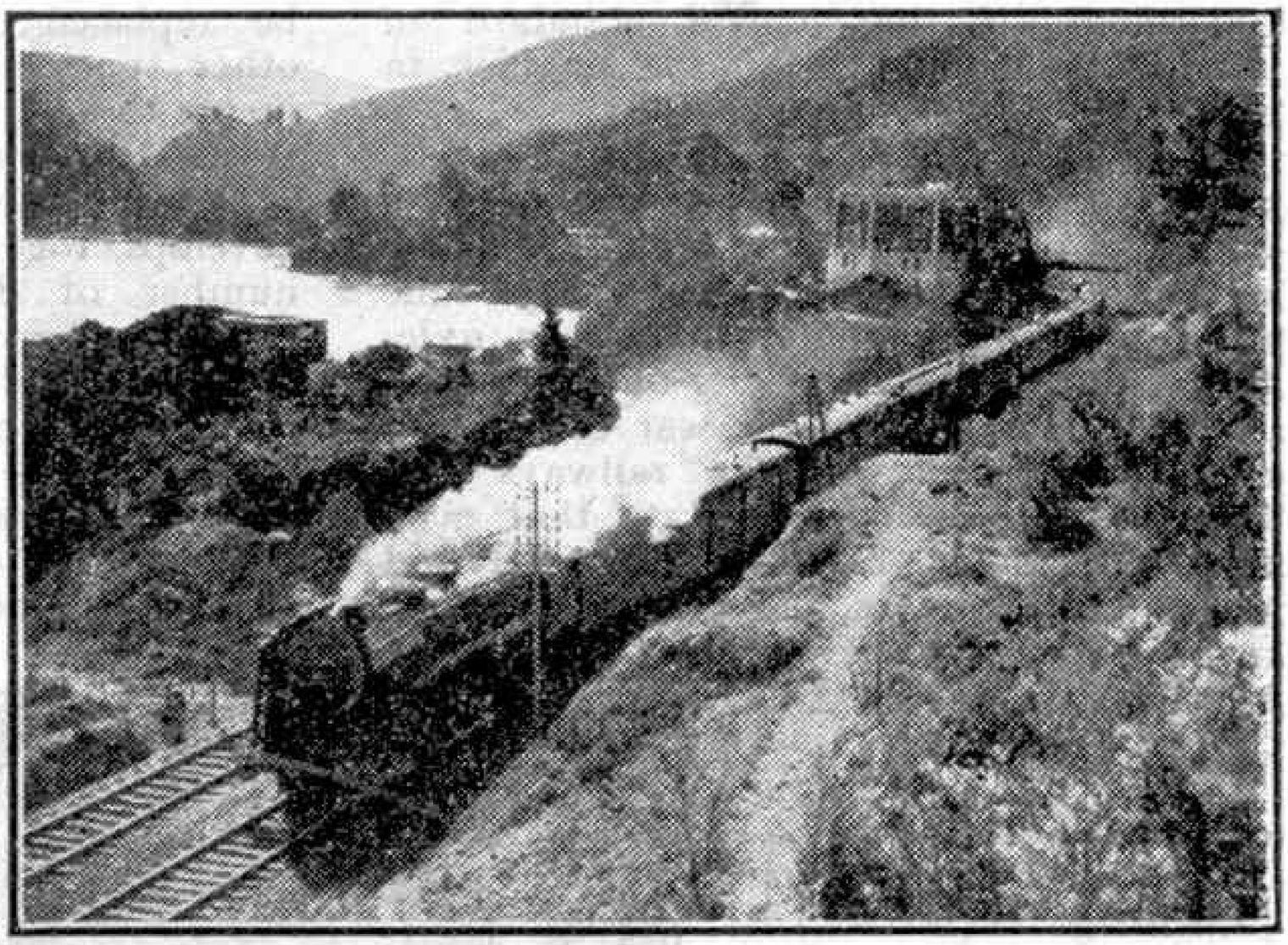
It would have seemed impossible, then, that by April 1945 traffic would have reached the level of 1938; or that by 1947 passenger and goods movements would be some 40 per cent. above that again. Yet this was so, in spite of the fact that after the liberation France was literally cut in two by the destruction of all the bridges across the river Loire below Roanne. Even the lines open to traffic (11,180 miles out of a total 24,800) were cut into sections isolated from one another; 2,603 bridges and viaducts had been destroyed and 70 tunnels blocked.

Although 17,058 steam locomotives were available at the outbreak of war, French Railways were only able to account for 10,500 in September 1944; and out of this figure, 3,000 only were in working condition. At the same time only 172,000 freight vehicles were in a serviceable condition; in 1939 the available stock had mounted to 478,000 vehicles.

The stock of electric locomotives had escaped requisition by the Germans as they could not be used on the single-phase electrified lines of the Reichsbahn or German State Railways. Generally speaking, all the motive power and rolling stock was in a very worn condition caused by excessive running, inadequate maintenance, and the use of poor quality lubricants for four years.

Less than two years after liberation nearly the whole of the S.N.C.F. system was again open to traffic, and by July 1948 a total of 2,491 bridges and viaducts had been rebuilt and 67 tunnels restored to traffic. To-day travellers agree that punctual, rapid and comfortable service is again the rule, in spite of the difficulties of these post-war times. The "*cheminot*" or French railwayman, both high and low, has indeed worked to some purpose.

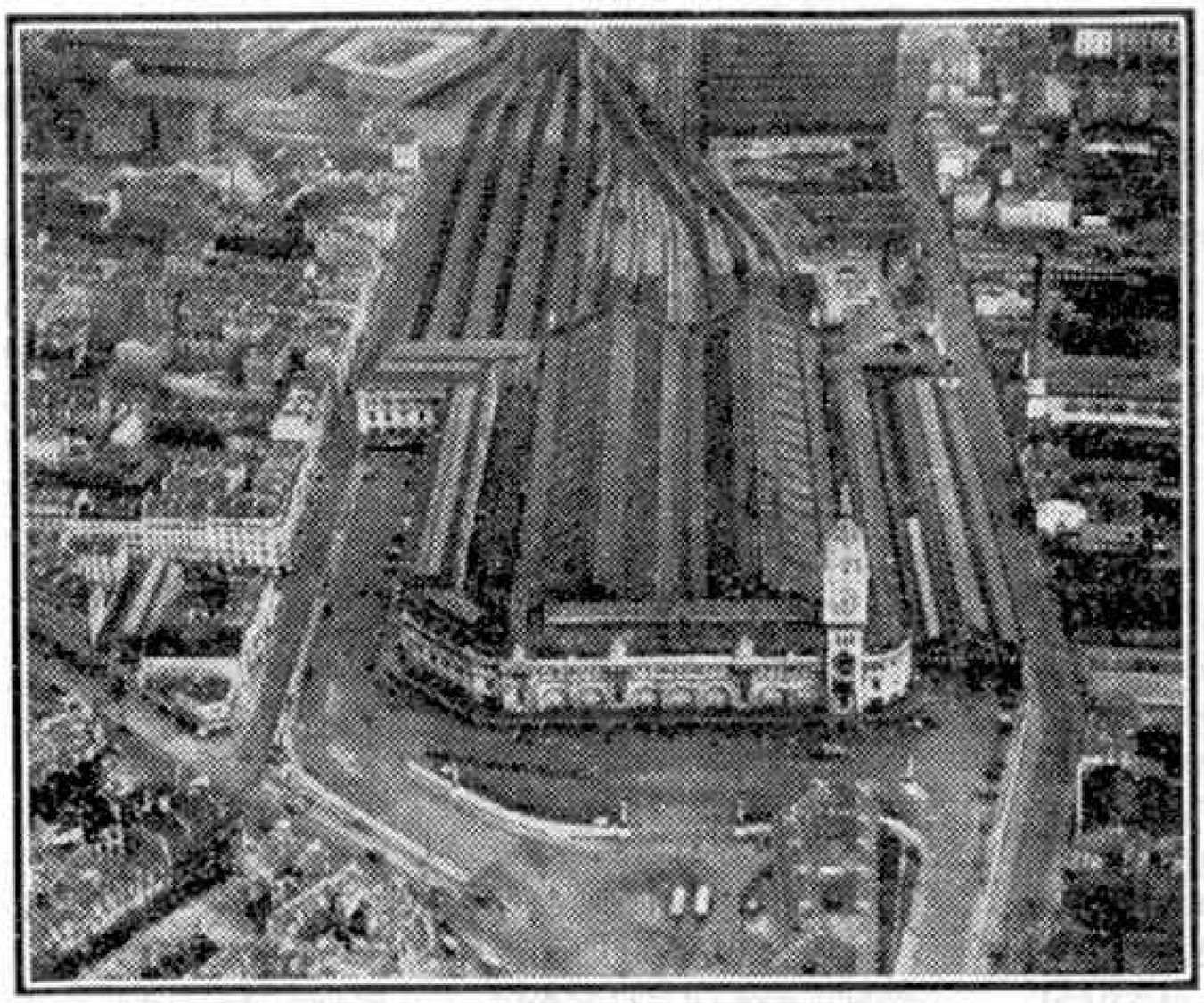
An extensive locomotive and rolling stock programme is in hand for future developments, and at the same time improvements and experimental features have been embodied in post-war reconstructions. One of the most interesting recent introductions has been that of a six-car train running on pneumatic tyres. This novel item of railway equipment will be the subject of a special article later. The provision of rubber tyres resulted from experience with various pneumatic-tyred vehicles of the railcar type.



**A French Railways express in the Esterel, near Cannes. The photographs and much of the information in this article are by courtesy of the S.N.C.F. (French Railways).**

All-metal coaches of new design constructed of lightweight alloys are being put into service. They are stronger than previous designs, and the saving in weight in the new type is such that four of these weigh the same as three of the older vehicles.

On the freight side, faster transit has been provided for some time for all goods



**A striking aerial view of the Gare de Lyon in Paris, whence depart trains for the South of France, Switzerland and Italy.**

requiring it, and freight operating methods have been improved. In general, the effect has been equivalent to adding many thousands of wagons to the stock. Among further developments that are being planned, in addition to the speeding up of ordinary goods traffic, is the introduction of road and railhead distribution services from selected centres that are to be linked by really fast 850-ton freight trains.

At the same time it is proposed to raise the passenger train speed limit on main lines to 87 m.p.h., with a higher figure still for railcars. Reference to the latter vehicles recalls the extensive use of railcars made by French railways even before the war, and the constant improvements that have been made. Nowadays, two power cars with a specially-designed trailer vehicle usually make up a train. The head and tail ends of these units incorporate a 410 h.p. diesel engine, coupled to a generator on the front bogie. This generator feeds the two electric traction motors mounted on the rear bogie.

France is traditionally the home of some very fine steam locomotives, having long outgrown the quaint and even eccentric designs common in earlier days. The de Glehn compound system, originated many years ago, can be said to have inspired much of the subsequent research and progress in steam locomotive design, and it is still successfully used. Among the best-known engines working on the de Glehn principle are the so-called "Super-Pacifics" developed by the former Nord system.

An interesting French locomotive refinement is the cab apparatus carried by many engines that charts a continuous record of every journey. The chart not only furnishes a time-speed record, but where a warning signal, indicating a "stop" signal ahead, is passed, and acknowledged by the driver, this also is shown on the record.

New designs of steam locomotives at present being built are mainly of standard types. There is the *"Type 241 P,"* or 4–8–2, for heavy express and *"rapide"* trains. *"Type 141 P,"* or 2–8–2, are mixed traffic engines for passenger trains at speeds up to 70 m.p.h., and accelerated freight trains up to 1,200 metric tons or heavy freight trains up to 1,400 metric tons. There are 2–10–0 designs for coal and mineral trains and 2–10–2 tank engines for heavy trains over short runs. *"Type 050 TQ"* are 0–10–0 tank engines for hump shunting work.

Future construction of electric locomotives will be devoted to direct developments of the types of electric locomotives at present in service. These include the 4,000 h.p. units of type 2-D-2 (4–8–4), having a top speed of 100 m.p.h. and capable of taking trains of 850 metric tons at 87 m.p.h.

**A typical scene outside the Gare de Lyon, with an express just getting away from the platforms.**

# A Variety Entertainment for Christmas

By Norman Hunter (From Maskelyne's Mysteries)

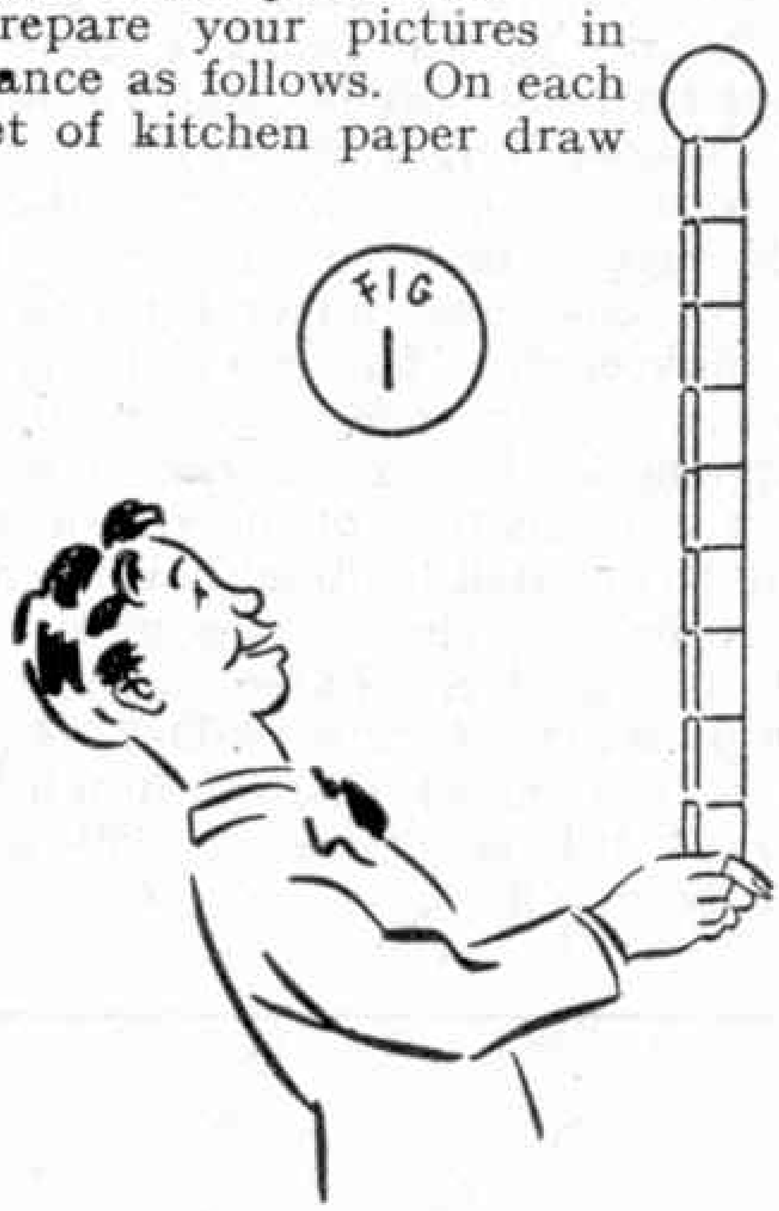
THE Editor has asked me to give you a change from my usual article on conjuring this Christmas, so I have decided to explain how you can give your friends a one-man variety show. We will start off with:

## LIGHTNING SKETCHES

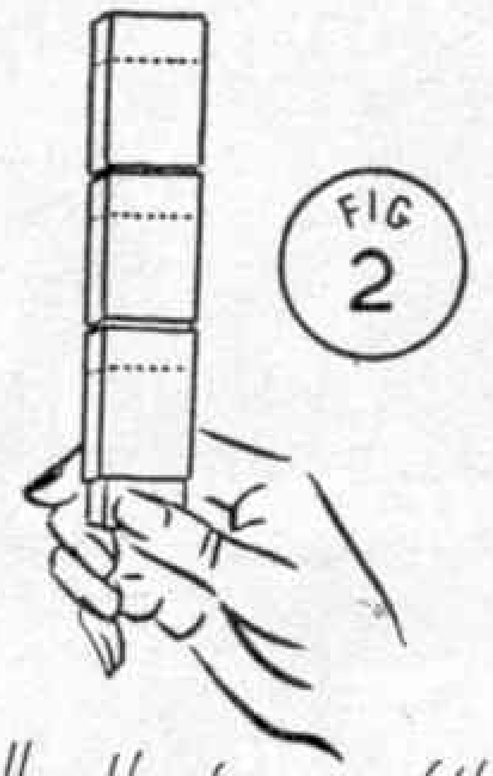
You do not have to be an artist to give this part of the show. You will need some large sheets of kitchen paper, a board to pin them on and some sort of easel to stand the board on. An ordinary chair makes a good easel if you stand it on a box to make it higher. You will also need some black chalks and a few coloured ones.

Your act will consist of making several rapid sketches in black and white, then one in colour. The last one is rather a mystery, until you finish it and turn the board upside down, when the audience see what the picture is.

Prepare your pictures in advance as follows. On each sheet of kitchen paper draw




very lightly with pencil a picture, copying, or tracing if necessary from a book or magazine. Then go over all the lines with Chinese white water colour, painting fairly broad lines. At a distance of a few yards the white lines will be invisible to the audience, but you will be able to see them easily and all you have to do is to go over them with your chalk. A good subject for the last picture would be a portrait of the King or of Mr. Churchill—you will find plenty to copy from. To put on the colour quickly, either shade with open parallel lines or else use the side of the chalk to cover the area rapidly. Don't try to put in a lot of detail, a bold outline drawing is most effective.




*How the drawers of the boxes are interlocked*

The second part of your show is:

## JUGGLING

Here, too, no skill is needed. The first juggle consists of balancing eight or ten matchboxes one on top of another and finishing off with a tennis ball. Fig. 1 shows the effect, and Fig. 2 explains how you manage to do it without difficulty. As you place each box on top of the previous one you push the drawer down a little way, so that the boxes interlock. The tennis ball, or other fairly heavy object, on top, steadies the whole structure.

Of course you make a great show of keeping the affair balanced. Finally grasp the ball firmly, push up the projecting part of the bottom drawer, and all the boxes will fall apart and tumble about on the floor, convincing the audience that the balance was genuine.

The second juggle looks frightfully clever, and it's frightfully easy. You open a sunshade, balance a tennis ball on the edge, start the sunshade twirling round, and keep the ball running round the edge. No, this doesn't mean seventeen weeks' practice, it means a foot or so of black

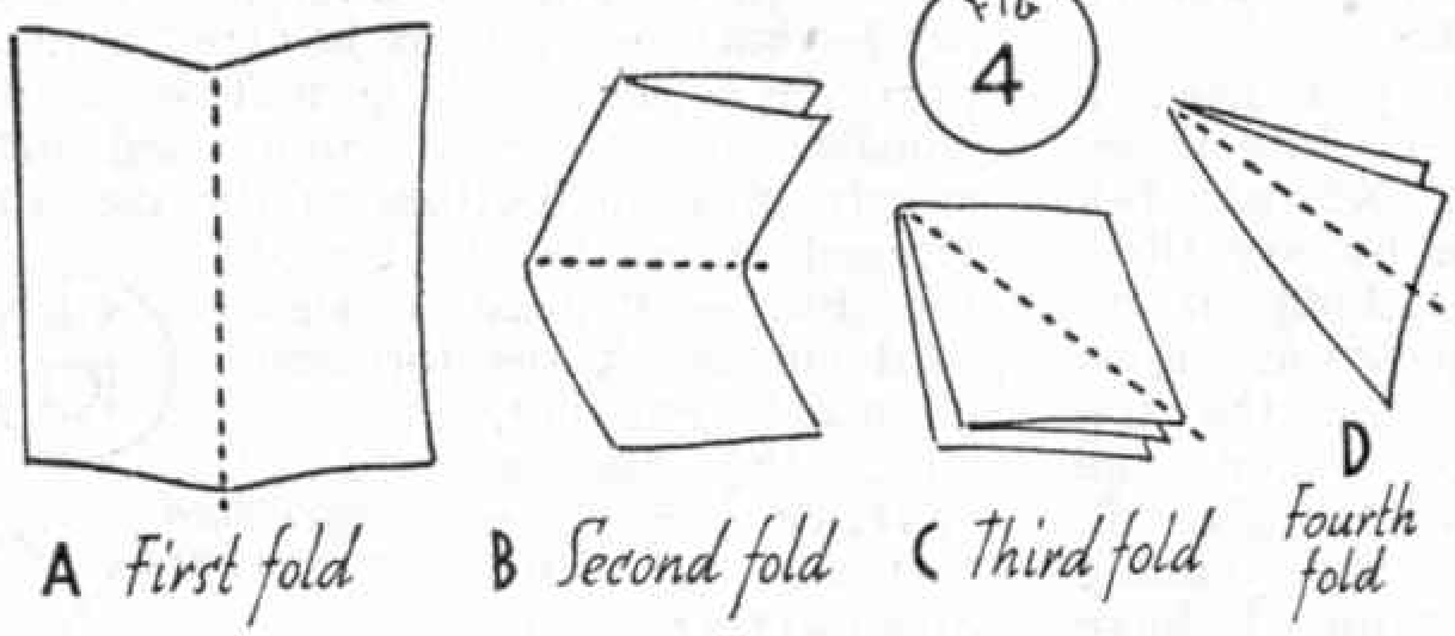



FIG 4

cotton and a little curtain ring. Tie one end of the cotton to the ring and fix the other end to the ball. The distance between ring and ball must be a little less than the distance from the ferrule of the sunshade to the rim.

To perform the juggle, open the sunshade. Then, under pretence of balancing the ball on it, slip the ring over the ferrule

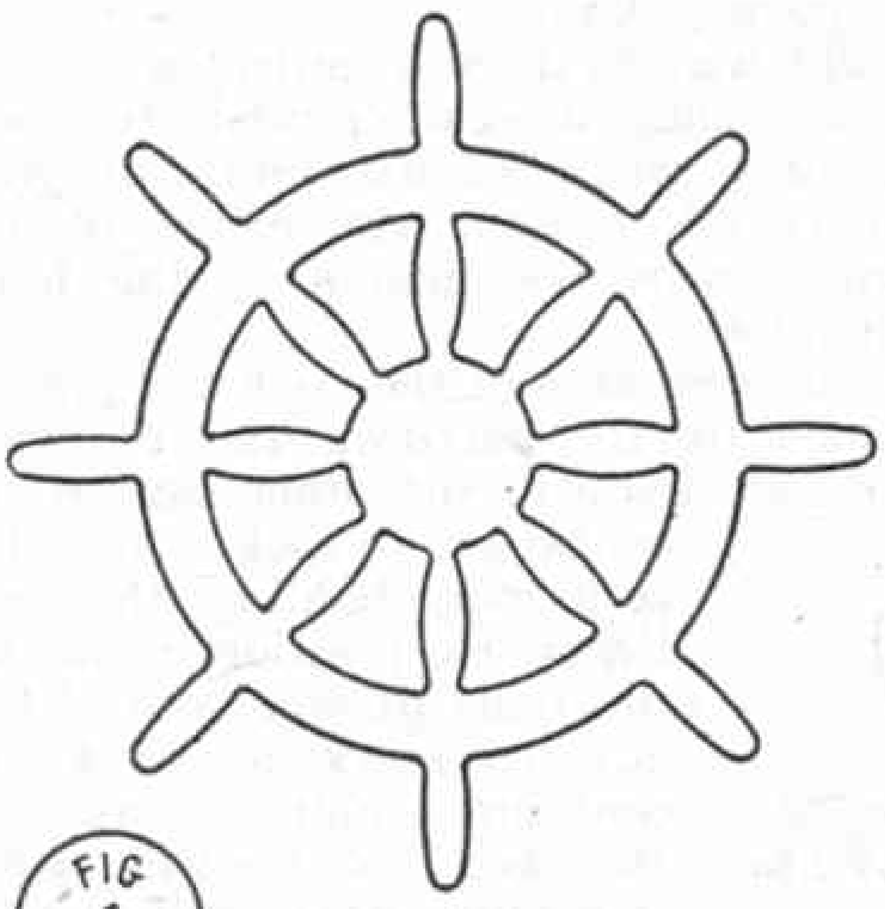



FIG 6

(if you use a Japanese sunshade you must drive a small headless nail into the wooden ferrule to take the ring). Now give the sunshade a sharp twirl with one hand as you let go of the ball. Keep the sunshade twirling and the ball will go bouncing round. Be careful to tilt the sunshade so that the trick looks possible; which as a matter of fact it is, in the hands of an expert. Finish the trick by tossing the ball into the air, thread and all, and close the sunshade. Fig. 3 will make everything clear.

The juggling act being over we pass straight on to:

## PAPER TEARING

This always impresses an audience as being very skilful, but actually it's as easy as falling off a house, and hurts a lot less.

FIG 5

You begin by folding a large piece of paper into a sort of dart; tear off a few bits, open it out and you have a SHIP'S WHEEL.

Prepare your paper in advance. Take a square sheet of kitchen paper or thin coloured paper. Fold it in four, then fold diagonally; finally fold diagonally again as shown in Fig. 4, A to D. On the folded paper lightly draw the outline shown in Fig. 5. In this illustration the shaded part shows the part you tear away, but do not put this shading on the paper; the pencil outline is only to guide you and should not be seen by the audience.

Bring the paper on open, fold it into its folds, which will be quite easy as it will practically fold itself back. To the accompaniment of a little music proceed to tear round your pencil lines. The secret of getting a good clean tear is to tear round your thumb nail, tearing first round your right thumb nail, then round your left, according to which way the tear has to curve. Shake out the design and it will appear as in Fig. 6. "*A Life on the Ocean Wave*" or some other nautical sort of tune will help the effectiveness of the act. Hang the wheel against a dark curtain and proceed to

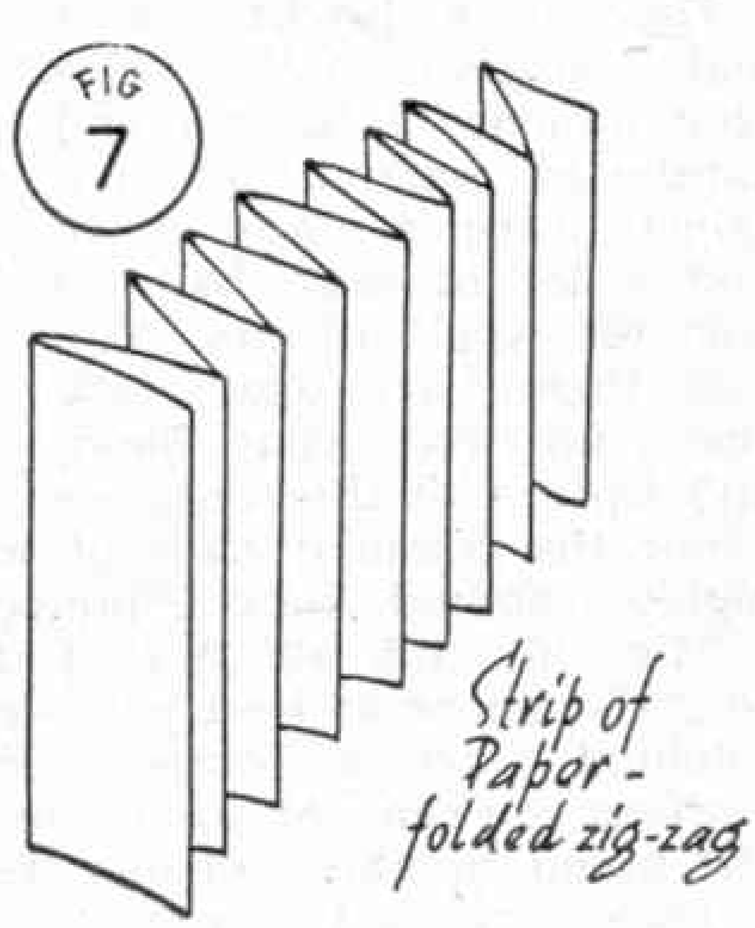
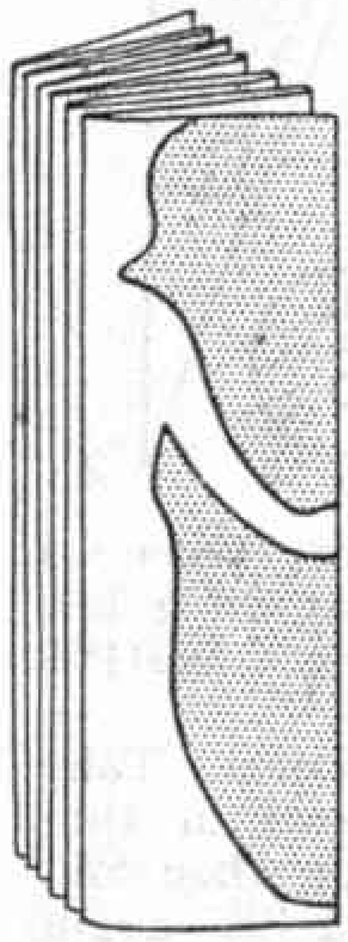



FIG 7

FIG 8

Design for tearing Jolly Jack Tars



the second item, JOLLY JACK TARS.

For this you need a long strip of white paper measuring about ten inches wide by say three feet long. Fold it in accordion pleats as shown in Fig. 7. On the top fold, lightly pencil the shape shown in Fig. 8. Here again the shading is not put on, I have included it to show you the parts you tear out. For this item you can bring on the paper ready folded, show it, tear out the pattern to a tune such as *"All the Nice Girls love a Sailor."* Then, when you open out the strip, you will find you have a row of little sailors standing hand in hand as if dressing ship.

One word of caution. Use thin, soft paper for this act. Ordinary kitchen paper is quite good. Tissue paper is too thin and fragile, but be careful not to use a hard or thick paper or you will find it too tough to tear easily. With kitchen paper or something similar it is surprising how many thicknesses you can tear through at once if you remember my previous tip, always to tear round your thumb nail, which acts as a sort of cutter.

Now I think, just to keep up the old tradition, we should have just one item of:

**MAGIC**

Here is a bright, quick and effective trick. You pick up one of those round cardboard waste-paper containers, turn it upside down and a lot of little balls of coloured wool fall out. You toss them back again, stir them up with your hand, and tip out of the container —not the coloured balls of wool—but a highly coloured knitted jumper or scarf.

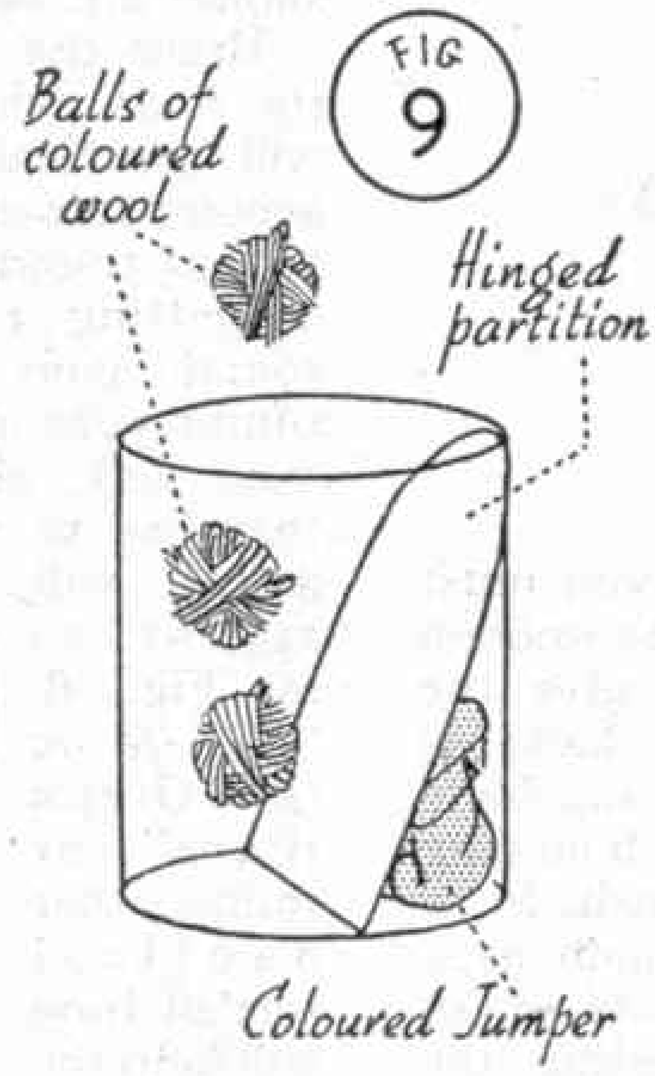
The only difficult part of this trick is to get someone to lend you a nice fiercely coloured scarf or jumper. Failing that perhaps you can get round your sister or girl friend to knit you one specially.

The cardboard container is just a cardboard cylinder of suitable size, closed at the bottom. Into it is fitted a hinged partition as shown in Fig. 9. This partition consists of a disc of stout card fitting snugly into the bottom of the container. Hinged across the centre of the disc is a piece of thin card curved at the top and of such length that, when the disc is resting on the bottom of the container, the partition lies slatwise inside, the top coming just below the rim of the container (Fig. 10). To be an exact fit, the hinged partition should really be half of a perfect oval; but if you do not happen to know the right way to draw a perfect oval, you will find that a semi-circular top will work quite well, because you can press the partition against the inside of the container with the fingers of the hand that hold it.

FIG 10

At the beginning of the trick the jumper is hidden by the partition and the balls of wool are loose in the other side of the container. Pick up the container, holding the partition in position, and tip the balls of wool out. It is not necessary to show the container empty, as the audience, not knowing what is coming next, will assume the container to be empty after seeing it turned upside down.

FIG 9

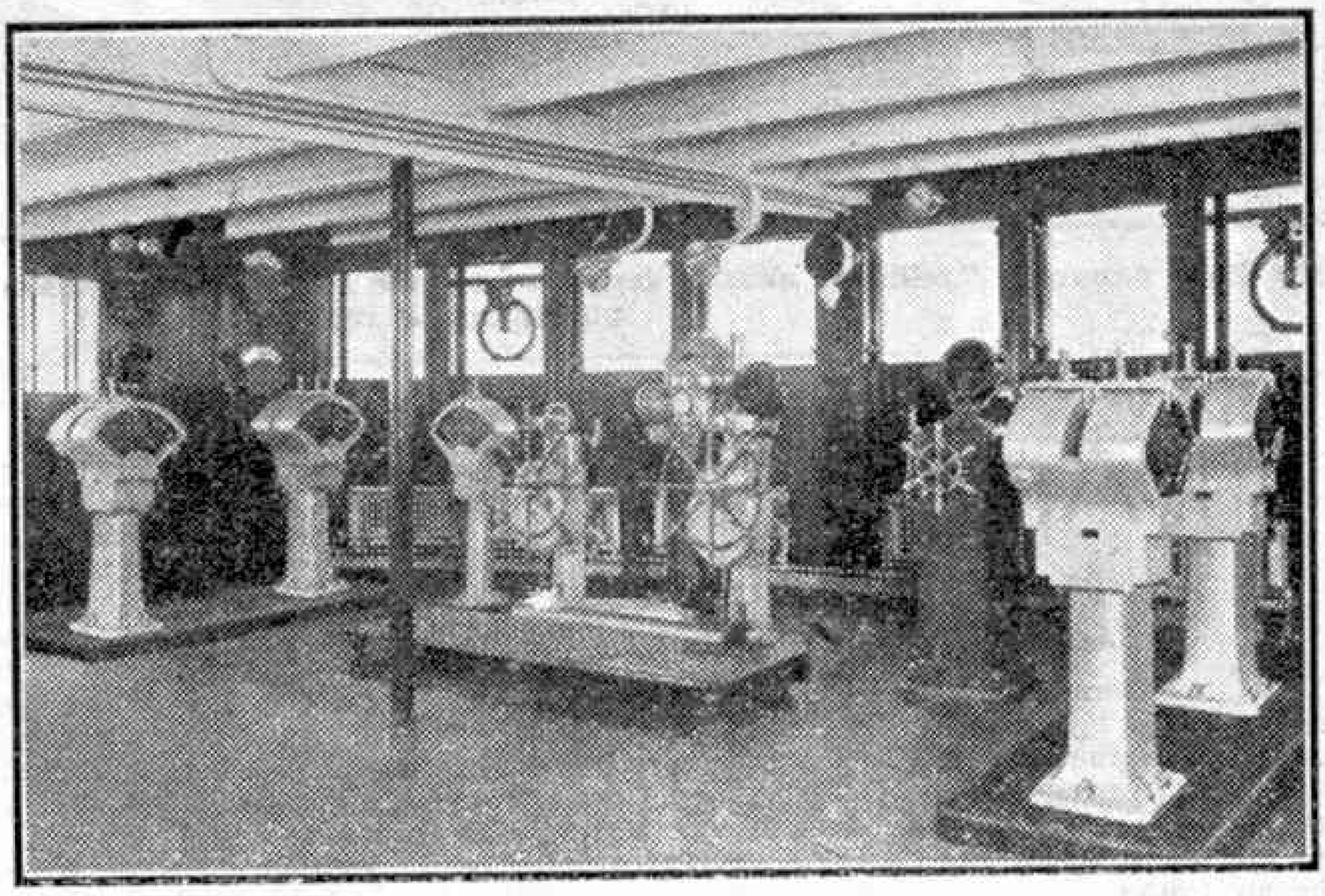



Now pick up the balls of wool, toss them into the air and catch them in the container. Stir them about with your hand, and under cover of this movement switch the partition over so that it covers the balls of wool and uncovers the jumper. Now grasp the container at the top on the side where the partition now rests, gripping the top of the partition with the fingers that hold the container. Swing the container over and toss the jumper out. Put the container aside, pick up the jumper and display it.

Before presenting your show rehearse it a few times so that it runs smoothly.

# Electric Telegraphs for Ships

WITH the change-over from sailing vessels to steam-driven ships, a reliable and speedy method of transmitting orders from the bridge to the engine room became a vital necessity. Early records show that one of the first methods employed was for the Captain on the bridge to shout his order to a deck boy stationed at the top of the engine room skylight hatch, who in turn repeated the order to the engineer down below. This primitive arrangement was very soon displaced by the introduction of the old-fashioned speaking tube, but this also had its drawbacks, particularly regarding the confusion of tongues. This in turn was superseded by the mechanical telegraph which was welcomed by both bridge and engine room personnel.



**Telegraphs in the wheelhouse of the liner "Queen Mary." A similar installation is fitted in the "Queen Elizabeth." Photograph by courtesy of Siemens Brothers and Co. Ltd.**

Mechanical telegraphs have proved reasonably satisfactory on small craft, but when installed on larger ships the method of operating wire ropes or rods and gear wheels has serious limitations. Although the method of using wire ropes has the appearance of simplicity, the stretching of the ropes can frequently give rise to trouble. It will be appreciated that the heavy initial tension required on the ropes to enable the movement to be transmitted without appreciable stretching often causes them to break when being moved for sending an order, and in any case the tension requires frequent adjustment to ensure the accurate transmission of the necessary orders. Again, the methods of using rods and bevel wheels often presents difficulties arising from the torsion of the rods and backlash in the gear wheels. The high cost and inconvenience of fitting this equipment for mechanical telegraphs also arises in many instances, particularly in connection with ocean-going passenger ships.

With the Siemens electric telegraphs the disadvantages of mechanical operation are all overcome, and there is the further advantage that the instruments can be fitted in any desired position. The operation of these instruments is not affected in any degree by the distance between them, and the passenger accommodation does not need to be studied in running the necessary electric cable as is the case with the installation of the gear required for the operation of a mechanical telegraph. Furthermore, the installation costs of the necessary cable are lower, also the length of the cable need not be given serious consideration.

From time to time various methods of telegraphing by electrical means have been introduced which depended upon the ship's power supply for their operation, and for this reason they have been considered unreliable. The power required to operate Siemens telegraphs is so small that a dry cell battery is employed.

The action of this apparatus is quite positive and the orders are transmitted over any distance without lag or inaccuracy. The standard telegraph instruments, which are supplied for single and twin engines, can be operated from one transmitting position, or two transmitting positions coupled together for use on either side of the bridge as will be seen in the illustration on this page. They are mounted on suitably designed columns with provision made for ease of access to the cable and (*Continued on page 469*)

**The 36-60 passenger "Jetliner" aircraft designed and built by A. V. Roe Canada Ltd., by courtesy of whom this photograph is reproduced.**

# Air News

By John W. R. Taylor

### Avro Canada's "Jetliner"

The handsome aircraft illustrated above is the Avro Canada "Jetliner," which failed by only a few days to beat the "Comet" to the honour of being the world's first pure-jet air liner. Plans for its production are well advanced, however, and it will certainly be one of the first jet air liners in regular service on the air routes.

The "Jetliner" is a 36-60 passenger aircraft designed for short and medium-range inter-city routes. It is powered by four Rolls-Royce "Derwent" 5 (civil) engines, which give a total of 14,000 lb. thrust. Intended to fly fast and high, the "Jetliner" will normally carry 50 passengers and their luggage up to 500 miles at a cruising speed of 427 m.p.h. at 30,000 ft. It is thus a most useful addition to the range of Empire-built civil transports, and one of which Canada's young aircraft industry may be rightly proud.

### Malayan A.T.C.

The first squadron of a new voluntary youth organisation, the Malayan Air Training Corps, has been formed at Singapore, and already has 150 members. It is organised on similar lines to the Air Training Corps in this country, is supported by the Government of Singapore, the Federations of Malaya and the Royal Air Force, and is open to youths between 16 and 18 of all communities. Members are trained in a range of flying subjects as a preliminary to entering the R.A.F. or civil aviation. Another aim is to provide recreational centres where boys of all races can meet.

During visits to R.A.F. stations, Malayan A.T.C. cadets are given flights in "Dakotas" and in "Sunderland" flying boats, and shown the working of Air Traffic Control Centres and Operations Rooms, as well as R.A.F. maintenance methods. Exceptional cadets may be awarded scholarships providing flying training up to "A" licence standard at the Royal Singapore Flying Club.

### The "Avon"

Highlights of this year's S.B.A.C. Show at Farnborough were the aerobatic displays put up by the English Electric "Canberra" jet bomber and a special experimental version of the Gloster "Meteor" fighter. Each aircraft was powered by two of the new 7,500 lb. thrust Rolls-Royce "Avon" engines, which develop the equivalent of 12,000 h.p. each at 600 m.p.h., and are the most powerful engines ever flown.

The "Canberra" was displayed with the dash and agility of a fighter, but its capacious bomb-bay gave a good indication of its still-secret offensive power. The "Avon-Meteor" made a phenomenally-fast climb to 40,000 ft. in a fraction over four minutes, a performance which should be compared with that of the "Beryl-Meteor," which was hailed as little short of miraculous last year when it climbed to the same height in 7½ minutes.

The pilot of the "Avon-Meteor" demonstrated another of its virtues when he dived across the airfield with both engines shut off, trailing two greyish-green plumes of unburned kerosene. With the plumes still breaking from the jet-nozzles, he flattened out, then went into a rolling climb. Just as it seemed he must stall, the plumes vanished, the engines roared into life and the "Meteor" continued its climb. This was the first indication that Rolls-Royce have solved the problem of how to re-light jet engines instantaneously during flight—a problem that has cost several lives in the past and which has not been solved satisfactorily anywhere else in the world.

### "Viscount's" C. of A.

An important stage in the development of the Vickers "Viscount" was reached on 15th September last, when it was granted a Certificate of Airworthiness, the first jet air liner in the world to achieve this distinction. The C. of A., which must be obtained before a British air liner can be used for airline passenger-carrying, automatically ensures compliance with the new International Civil Aviation Organization performance standards, which have just come into force.

In the 14 months following its first flight on 16th July 1948, the prototype "Viscount" flew for 290 hrs., during which time it covered over 50,000 miles and made more than 320 take-offs and landings.

### Middle East Airlines

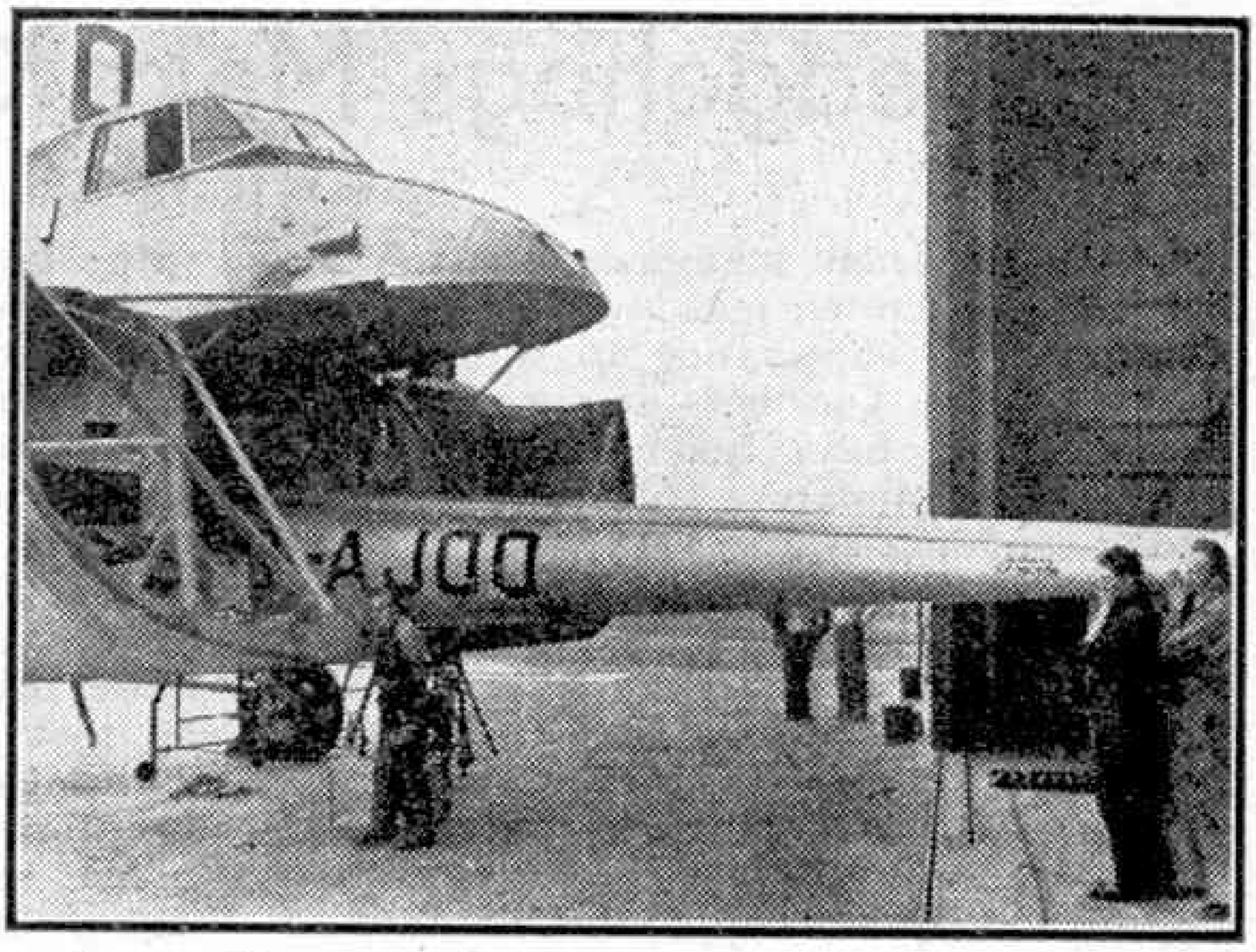
Pan American World Airways have acquired a 36 per cent. interest in Middle East Airlines in exchange for three "Dakotas," other materials and equipment.

The independent Middle East Airlines have consistently shown a profit, and have a perfect safety record after more than three years' operations. They operate scheduled flights from Beirut to Cairo, Damascus, Baghdad and Nicosia, Cyprus, with frequent charter services to the Persian Gulf and Turkey. The Company's schedules therefore link up with P.A.A.'s "Constellation" services at Damascus.

### Australian "Vampires"

The Australians were given a striking demonstration of the performance of the R.A.A.F.'s latest fighter when an Australian-built "Vampire" recently set up new records in both directions between Sydney and Melbourne. In the face of a head wind, it flew the 460 miles from Sydney to Melbourne in 67 min. and, after refuelling, returned in only 55 min. The previous record time of 1 hr. 22 min. had been established by a "Constellation."

The two additional air intakes behind the cockpit hood, which distinguish the Australian-built "Vampires" from those produced in Britain, can be seen in the lower illustration on this page, showing the first "Vampire" completed "down under." These intakes are needed because the Australian version is powered by a locally-manufactured Rolls-Royce "Nene" turbojet, instead of the more usual de Havilland "Goblin."



**Loading a "Spraycopter" helicopter into the hold of a Bristol "Freighter" for transport to the Sudan. (See special article on page 474 on the use of helicopters for crop spraying).**

### Flying Cinema

The U.S. Navy's 180-passenger Lockheed "Constitution" was used as a "flying cinema" recently when it cruised over New York at 15,000 ft. while the Navy showed films dealing with its work in locating destructive hurricanes. The "Constitution" is the largest air transport 'plane in regular service anywhere in the world, and normally is used for rapid transport of key U.S. Navy personnel and freight between the Atlantic and Pacific Fleets. For this particular mission it was specially equipped with a large silver screen against the forward bulkhead of its upper deck, which seats 92 persons.

The demonstration was more than just a stunt, for it is almost certain that the next generation of large air liners will feature a small cinema as part of their normal passenger amenities. In fact it has already been announced that the British "Brabazon" air liner and "Princess" flying boat will be so equipped.

### Reduced Winter Fares

Aer Lingus have announced cheaper fares for their Winter services. On the main cross-Channel routes—between Dublin and London, Liverpool, Manchester, Birmingham and Glasgow—the present mid-week excursion fares will be available on every day of the week. This means that the week-end return fare between Dublin and London, which stood at £14 17s. in October last year, has been reduced to £11.

The Dublin-Isle of Man service for the first time will be operated through the Winter on a once-weekly basis, and the 17-day Winter fare of £4 return represents a considerable saving on the normal return fare of £5 8s. The Dublin-Paris fare has been correspondingly reduced to £23, which compares favourably with surface transport rates on this important route.

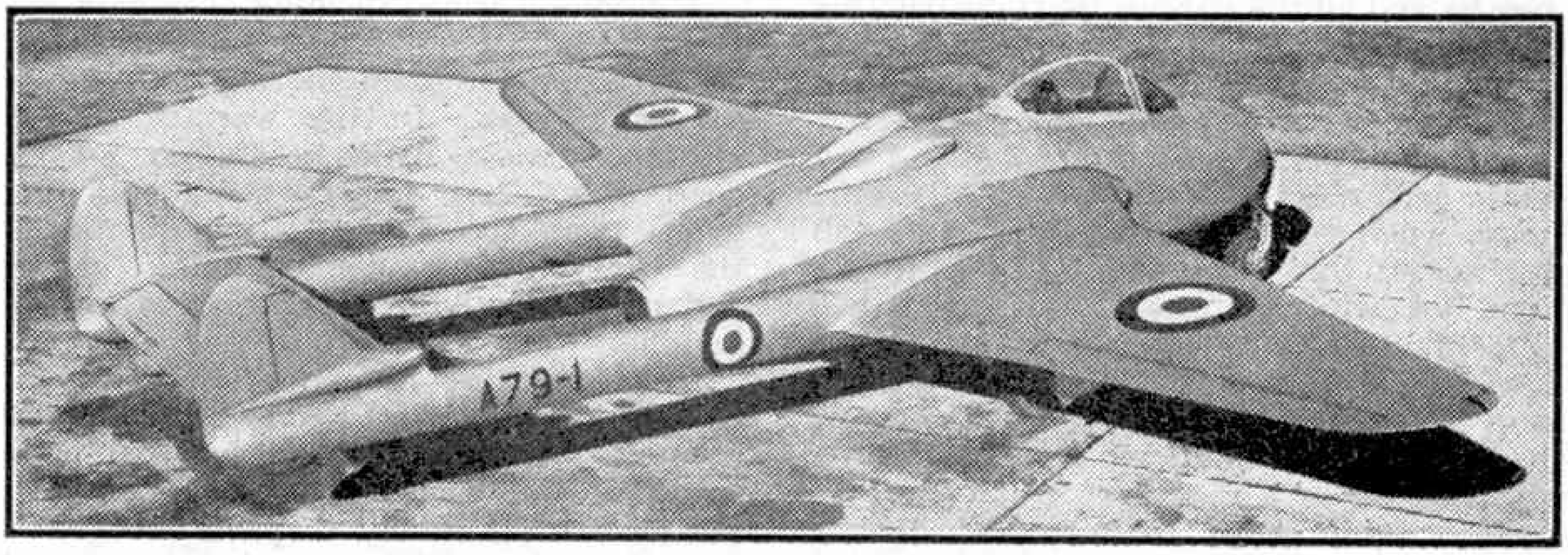
### "A Girdle Round the Earth"

The Shakespeare Memorial Theatre Company, like Puck, are "putting a girdle round the earth" by making a flying tour to Australia and New Zealand, returning home across the Pacific and the United States. Even with B.O.A.C.'s help they will not be able to equal Puck's schedule of 40 min. for the trip, but will cover their 30,000-mile journey in about 100 hrs.' flying time.

The 33 members of the company, headed by Diana Wynyard and Director Anthony Quayle, left London for Sydney early in October, accompanied by 55 costumes for the play "*Much Ado About Nothing*." Scenery for this play and "*Macbeth*" had already left for Australia by ship. The company will fly home early in February, in time for the 1950 season at Stratford.

### Flying Boat Feat

A "Hythe" flying boat of B.O.A.C.'s No. 4 Line recently flew 117 tons of agricultural machinery, including such things as harrows, disc ploughs, tractor wheels and brick-making machines, between Lindi, Tanganyika, and N'Kata Bay on Lake Nyasa, in connection with a Colonial Development Corporation project.




**The first Australian-built "Vampire" jet fighter.**

# Hedgehogs Make Good Pets

By R. H. Ferry, F.Z.S.

OF all the small mammals that inhabit our hedgerows, meadows, and woods, none is more captivating to watch than the hedgehog. One feels at once that the Creator must have taken extra care in making this miniature wild pig, which is so self-confident and so well armed against the dangers of the outside world.

If you keep a fox cub, young badger, or otter-lit as a pet, the time will assuredly come when the "call of the wild" is felt, and the animal pines for its freedom. A hedgehog on the other hand is an ideal pet. It can be turned loose in a garden, where it will live quite happily in a state of semi-captivity, doing at the same time a great deal of good by eating slugs, snails, beetles and all the various pests destructive to plant life. To make the little beast content at home, it is a good thing to put a saucer of bread and milk, or a few broken dog biscuits, at the same time and place each day. The pet will soon become tame when treated in this way, and will run to get this easily won addition to the food for which it has to search; but a discontented hedgehog will break out of almost any enclosure. It will easily climb a 6 ft. wire netting fence, and burrow beneath the foundations of a wall in a night!

If it is intended to keep a hedgehog through the winter, a big wooden box filled with hay should be put in a sheltered position under a bush, and about November the hedgehog will choose this site for its hibernation. After this has happened, of course, no tit-bits of food will be necessary.

In the wilds hedgehogs certainly prefer to hunt by night, but in gardens they appear to extend operations, and it is quite possible to watch and follow them on their foraging expeditions on summer and autumn evenings. If one is fortunate in procuring a boar and sow they will breed in captivity, and three to four naked blue-skinned little youngsters will appear in early June.

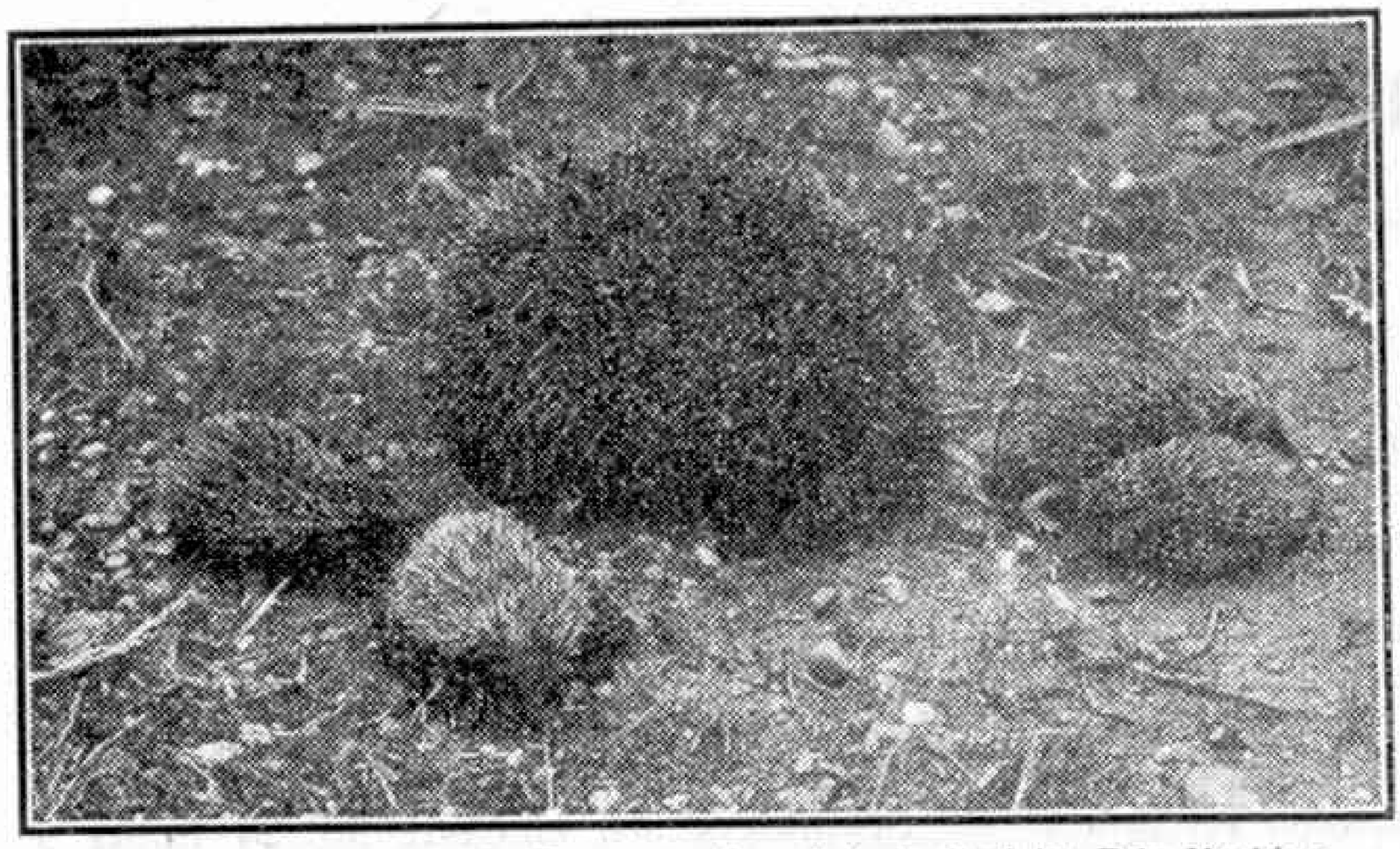
**The hedgehog looks out, but is ready to roll himself into a spiky ball at a moment's notice. Photograph by Eric Hosking, F.R.P.S.**

Hedgehogs are not popular with gamekeepers on big estates, as they will eat any eggs they come across, and also will attack young partridges and pheasants, so that they are fairly easy to come by in the country.

Just before the winter, in common with other hibernating animals, hedgehogs eat ravenously, and at this time of the year, when they are fat, gypsies catch and cook them, baking them in balls of clay. When the earth jacket is broken away, the spikes come off from the flesh and a tasty "urchin" steak remains. Even recently in a New York luxury hotel English hedgehog was the bonne-bouche on the menu.

A Romany friend of mine once gave me the good advice not to look for hedgehogs, but to listen for them snoring on a sunny woodside bank. In the warmth of the afternoon these little beasts go into a deep sleep, but their whereabouts are given away to anyone sitting quietly in the vicinity by snores, contented grunts and asthmatical breathing that is readily audible.

In olden times hedgehogs were treated as vermin, and many parish records show accounts of cash paid out for their destruction, the usual fee being about 2d. per head. But to-day they are recognised as extremely useful animal helpers and



A hedgehog brood, a family scene also photographed by Eric Hosking.

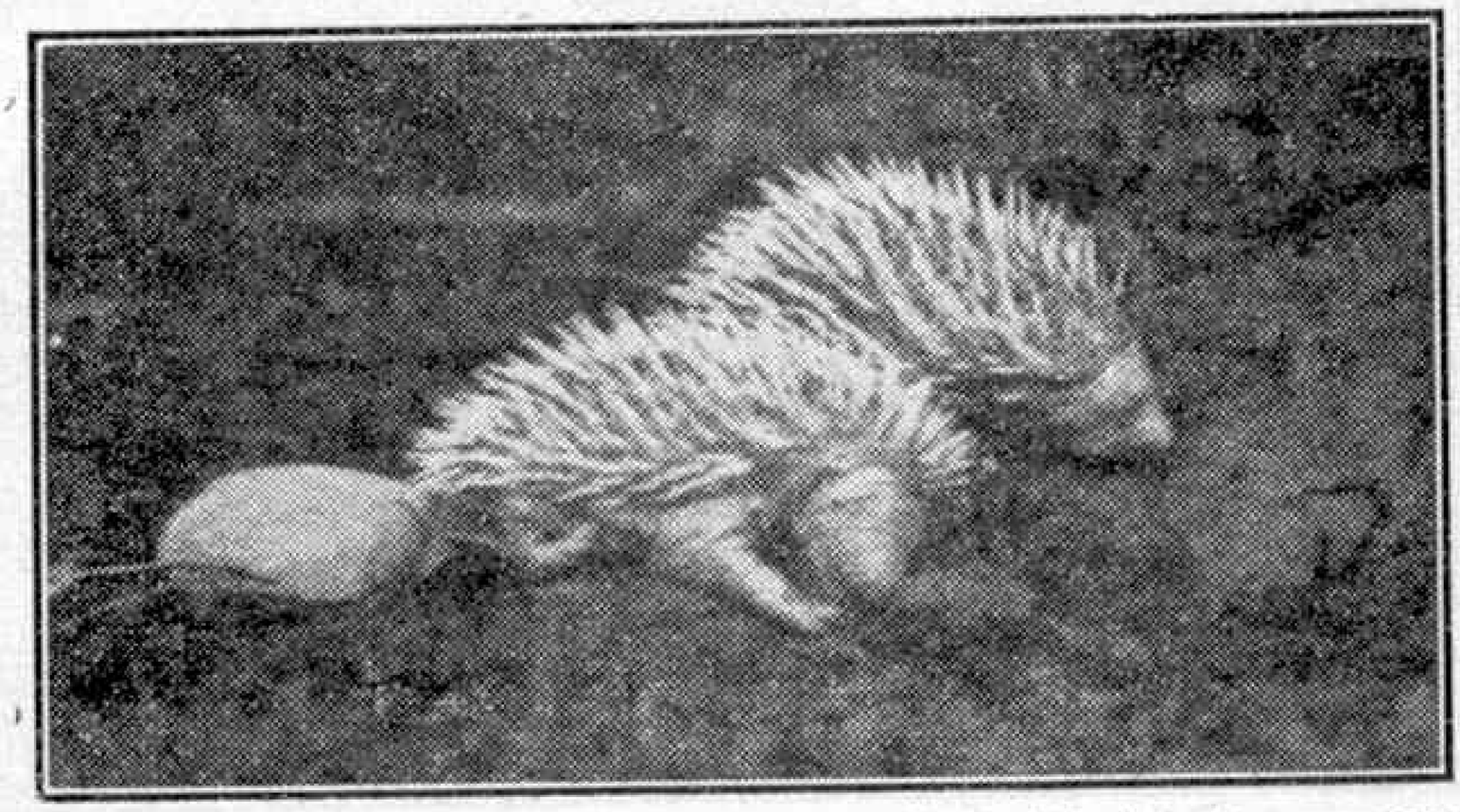
pest controllers in the great agricultural effort to grow more food. Nicknames are always a sure guide to popularity, and hedgehogs probably have more local names than any other wild animal in England. The Anglo-Saxons knew them by the name of "il." The most common country name of urchin is derived from the French name "herichun." Shakespeare refers to them by this name, and also as "hedgepigs." In Devon and Cornwall, where I live, the old farm hands call them "furzeaboar," and in the Midlands, where hedgehogs are probably more common than anywhere else in the British Isles, they are dubbed "furzemanpigs." In Somerset, a county where every beast seems to have an appropriate local name, hedgehogs are "perpentines," because of their resemblance to porcupines. There are literally scores of other names, and an interesting list pertaining to each county might well be compiled.

The spikes of hedgehogs are simply hollowed and hardened hairs. When the animal is running about they lie flat along the back like ordinary fur, and the hedgehog then appears very much like a tail-less rat—it does in fact belong to the rodent family. The spikes are only raised when the animal is on the offensive, or defensively rolled in a ball. The technique of rolling into a ball is done by contracting a wide band of muscle that runs right over the back; the body curls and the spikes automatically come into an erect position. Unlike porcupines, hedgehogs are unable to shed their spikes or leave them behind to fester in the flesh of a victim, as each is fastened under the skin at the base by a button of gristle.

Men through the ages have had a good many uses for the "hedgehog's back." The early Romans used the skin in lieu of a hair brush. Before pins were tin-plated and made of non-corrosive metal, medical students pinned out anatomical specimens under dissection with hedgehogs' spikes, as they did not rust.

Besides using them in ordinary defence against the attacks of dogs and cats, hedgehogs have other interesting uses for their spikes. When pursued and in fast retreat, the little creature will hurl itself without hesitation over any steep bank or precipitous drop, and on landing it bounces without apparent hurt, the spikes acting as "concussion springs." Just before hibernation the beast rolls in fallen leaves, thus gathering round itself a leafy eider-down to keep it warm in the long winter sleep.

As the hedgehog is one of the best known creatures in the country, it is not surprising to find a considerable amount of rural lore attached to it. In Anglo-Saxon times it was believed that hedgehogs possessed the evil eye, and (*Continued on page 473*)



These very young hedgehogs are already provided with defensive weapons. Photograph by J. H. Vickers.

# Automatic Fire Extinguishers

## How a Sprinkler Installation Works

By Richard Ounsworth

FIRE, an ever present enemy, causes immense damage to property and considerable loss of life each year. In 1948 Britain's bill for fire losses exceeded £18,600,000.

The best time to attack a fire is within a few seconds of the outbreak. If fire breaks out in a building at night when no help is available, ordinary fire appliances are useless. A fire may smoulder for hours before it is discovered, perhaps by a wisp of smoke seen by a passer-by, and the slightest draught is sufficient to make the smouldering material burst into angry, devouring flame.

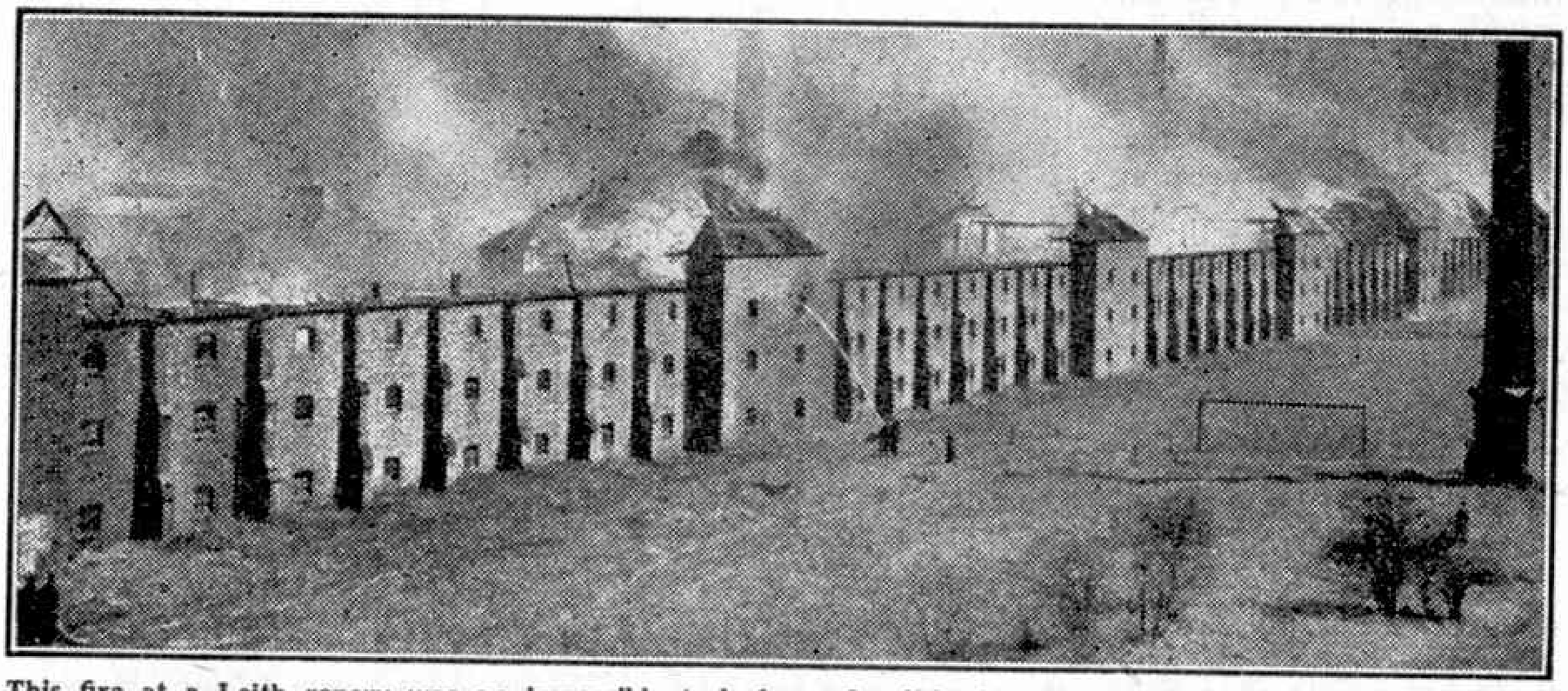
Thus it often happens that within minutes of an alarm being raised a large building becomes a mass of flame, making the task of the fire brigade well nigh hopeless.

Automatic sprinkler installations detect a fire within a few seconds of the outbreak, sound an alarm to summon help, and extinguish the fire, frequently before the arrival of the first fire pumps. They are unaffected by fumes and smoke, and will as readily tackle a fire in a confined space as one which can be reached from all sides. The official report on a recent fire in a cotton spinning mill affords striking proof, stating that they "extinguished fire when it was impossible to get near same for smoke and fumes."

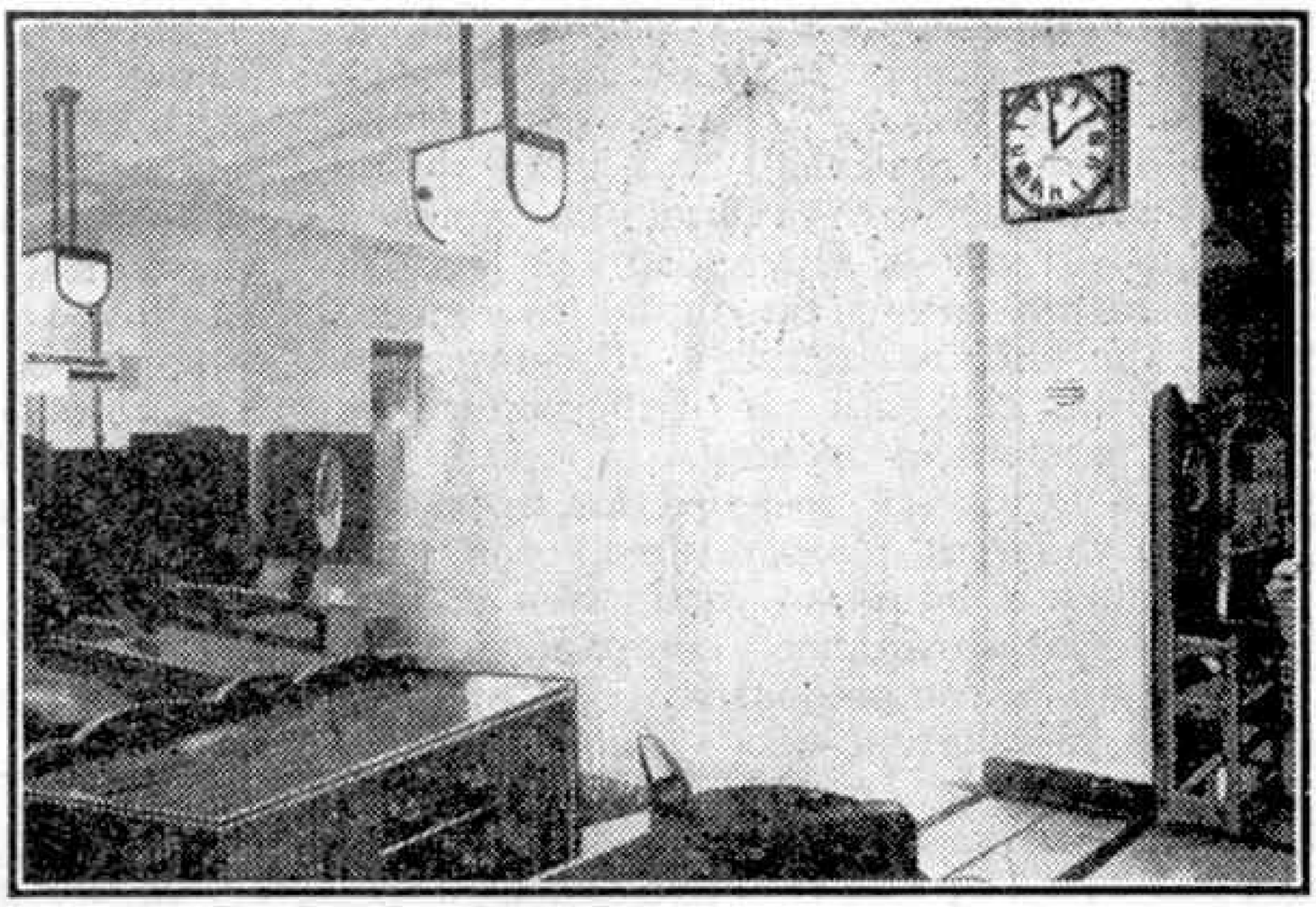
The installation comprises a network of pipes charged with water or air under pressure and suspended beneath ceilings and roof, in concealed spaces, under staircases and in every part of a building. At regular intervals along the pipe lines sprinklers are fitted, the usual requirement being one sprinkler for every 100 square feet of floor area.

Sprinklers are efficient for 24 hours a day, every day of the year, and have successfully extinguished fires 50 years after their installation. So reliable is the protection they afford that premises containing goods worth several millions are left unattended at night, the owners confident that any outbreak of fire will be speedily and efficiently dealt with by the sprinkler installation.

A large departmental store in London's West End contains stock worth a king's ransom. No night watchmen are employed, as the firm have complete faith in their sprinklers. In addition to the four alarm gongs to give immediate warning of fire—one for each sprinkler installation—there is a system of electric alarm bells that shrill a warning throughout the building as soon as the first sprinkler head opens. An alarm is also sounded in the nearest fire station, bringing the scarlet and gold pumps racing to the scene. These alarms are entirely automatic in action.



**This fire at a Leith ropery was an impossible task for a fire brigade. The buildings were not protected by sprinklers. The illustrations to this article are reproduced by courtesy of Mather and Platt Ltd., Manchester.**



**A sprinkler head in action, with a curtain of water drenching the surrounding area.**

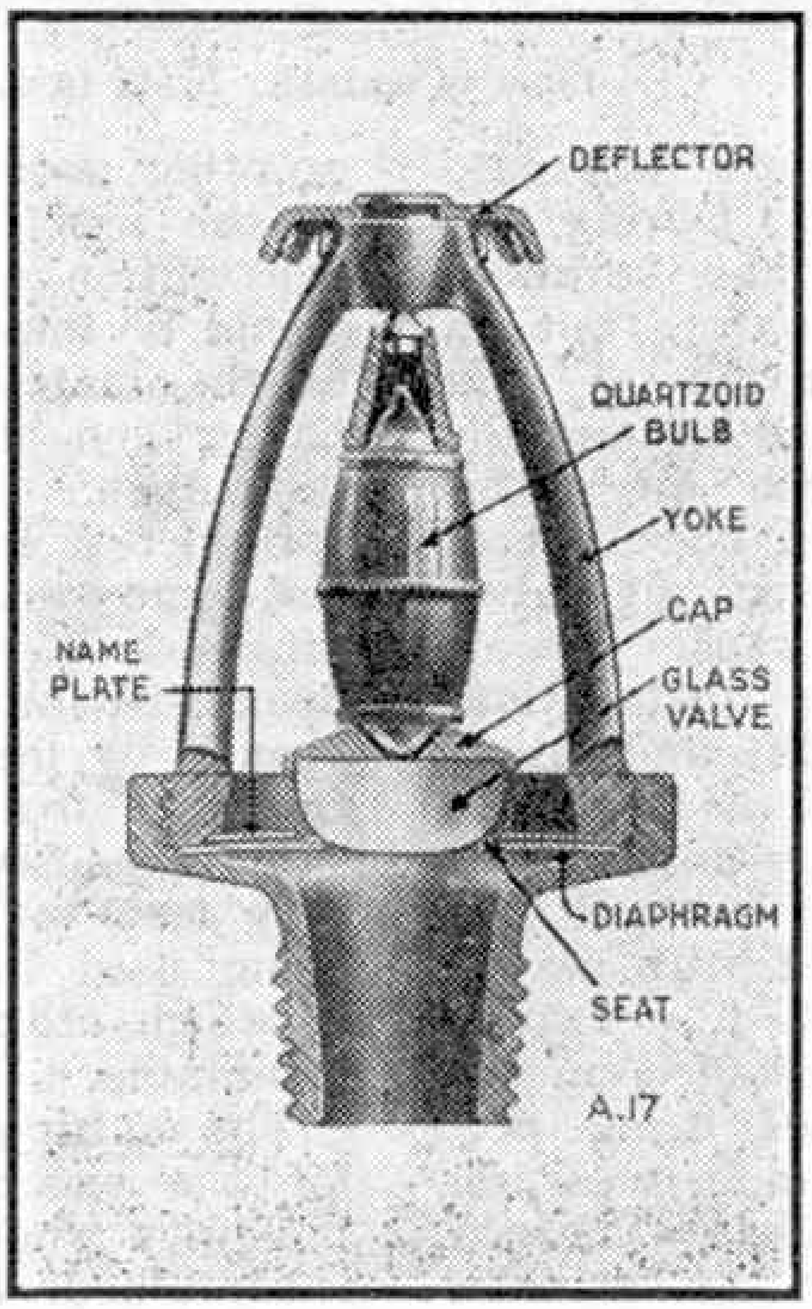
The first automatic sprinkler head was invented in 1864 by Major A. Stewart Harrison of the First Engineer London Volunteers. This pattern was not placed on the market, the first to be used commercially being an American design invented in 1874. The first installation in Britain was erected in a Lancashire cotton mill in 1882. Cotton mills have had many disastrous fires in their history on account of the dust and grease present in many of the processes, which enable a fire to spread with fearful rapidity. The most satisfactory early sprinkler head was one invented by another American, Frederick Grinnell, a few years after the 1874 type had been placed on the market. It was the forerunner of most modern designs.

Until a fire breaks out water is held back in the pipes by automatic valves forming part of the sprinkler heads. All sprinklers are made to open at a predetermined temperature, usually 155 deg. F. More suitable temperatures are used for situations where high temperatures are normally experienced, such as boiler and drying rooms, and for tropical countries.

When a fire causes the temperature in a room to rise above the predetermined figure, the struts of the affected sprinkler heads fall apart, allowing water to flow through the opened heads. The water is not projected on the fire in the form of a solid jet, but is broken by a deflector so that it descends in a drenching shower. If the fire spreads, additional heads open and the whole area involved by the fire is drenched with water. Within a few seconds of the opening of the first sprinkler a turbine gong is actuated by the water flowing through the pipes and the alarm sounds outside the premises protected. This alarm continues to ring until the supply of water to the turbine gong is turned off. A metal plate, always seen outside sprinklered buildings, bearing the words "SPRINKLER STOP VALVE INSIDE," indicates where the installation valves are housed, to avoid delay in shutting off the water supply when the fire has been extinguished.

Since sprinkler systems were first introduced over 100 different types of head have been designed, improving on earlier patterns. To-day there are upward of 20 different patterns approved by the insurance companies. The majority of these depend for their operation on the melting of a fusible link or strut under heat from a fire, when water is released. It has been found that in certain situations where corrosive fumes may be present, or where moisture-laden sea air has attacked the heads for a number of years, they become corroded and their efficiency often is impaired.

To overcome this difficulty the glass bulb sprinkler has been evolved. The bulb holds the valve in position until heat from a fire causes it to break up; water is then discharged on to the fire. The Quartzoid bulb




**A Grinnell quartzoid bulb sprinkler head of the modern type in use to-day.**

head manufactured by a leading firm of sprinkler engineers is proof against such forms of corrosion. It is of very strong and durable material, and after being filled is sealed with a liquid in which a bubble of gas is entrapped. A rise in temperature causes the liquid to expand until the bulb is shattered, all component parts being thrown clear of the waterways at the moment of opening.

These heads are designed for operation at five different temperatures, each type containing a liquid of distinctive colour.

The fire insurance companies have drawn up a comprehensive code of rules for the installation of sprinklers. A large building may require several separate installations to afford protection, each with its own set of installation valves and alarm gong, although all may be supplied from the same water mains. One installation does not as a rule serve more than 1,250 automatic sprinklers.

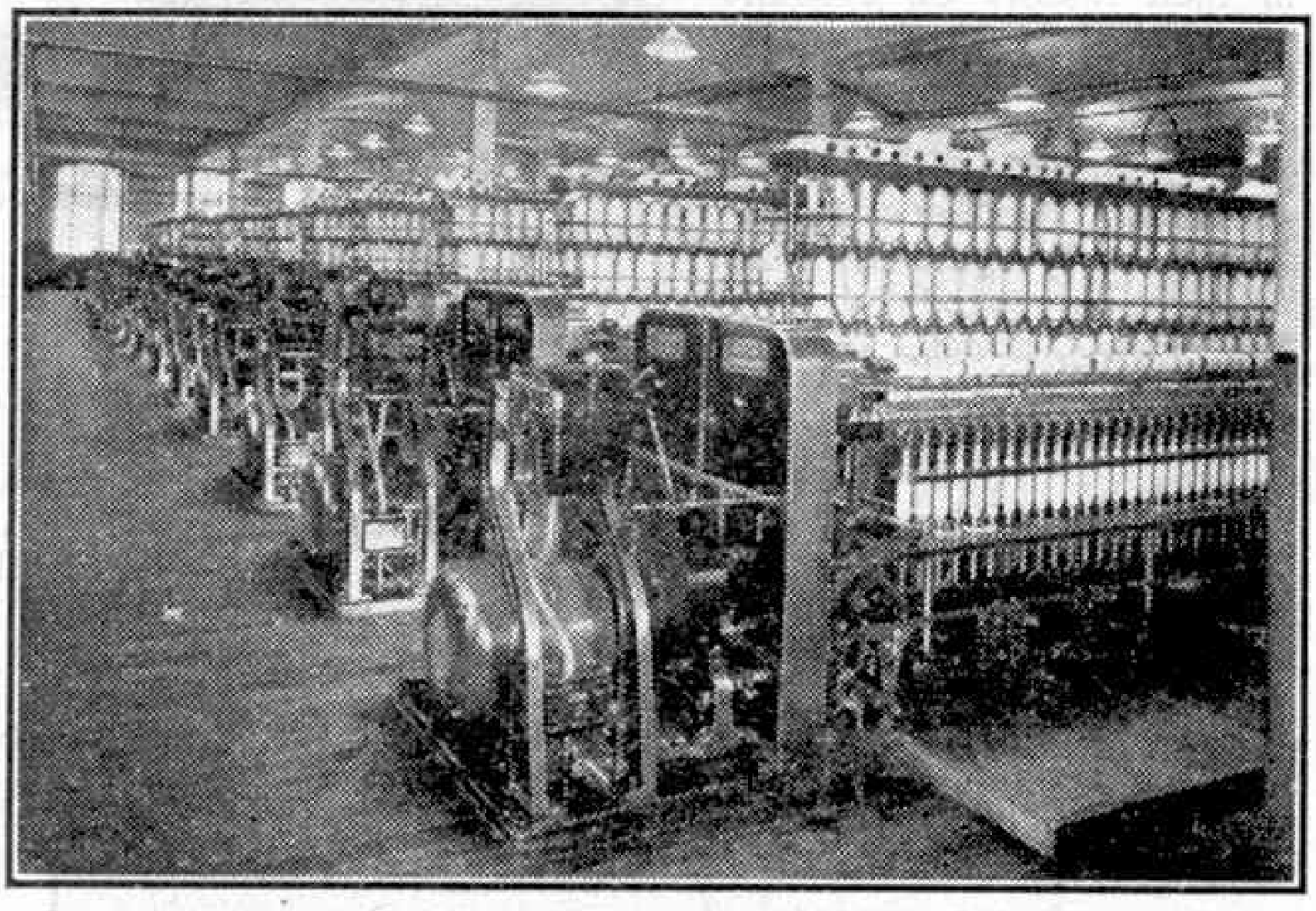
In situations where there is a risk of the water in the pipes freezing in winter, for example in bus garages, loading bays and other exposed sites, the sprinkler system can be erected on the alternate "wet" and "dry" system. During the period of warm weather the sprinkler pipes are charged with water, but in Autumn, before the approach of cold weather, the water is drained off and the installation is charged with air under pressure. The water is held back out of reach of frost by a differential air valve. The opening of a sprinkler causes the air to be released from the installation, allowing the air valve to lift and admit water to the system, which is then projected from the opened heads in the usual way. In Spring the air is released and the pipes are again charged with water. In Canada and other cold countries sprinkler installations are installed on the dry pipe system, the pipes being permanently charged with air under pressure.

Wet installations that are always charged with water are erected with the sprinkler heads fitted below the lines of distribution pipes, but alternative systems have their sprinklers fitted above the pipes. This allows the pipes to be drained of water without the risk of any pockets remaining which might freeze.

Insurance companies grant considerable discounts off fire insurance premiums for approved sprinkler installations, the amount of discount being dependent on the class of risk and the available water supplies. Not only do insurers inspect and test a new sprinkler installation before it qualifies for a rebate of premium, but tests are also carried out at regular intervals.

In certain risks such as tanneries, hides or other goods are often stacked so close to the roof or ceiling that the efficient distribution of water from the sprinklers would be impaired by the screening effect of the material. Multiple jet sprinklers have been designed to overcome such difficulties. Instead of the standard sprinkler a multiple jet control protects the same area. The control is coupled by pipework to a number of permanently open distributor heads, and when it is opened by fire, water is discharged on to the fire from the several distributors simultaneously. Multiple jet sprinklers may form part of a normal installation, being used for those portions of a risk in which ordinary sprinklers might prove unsuitable.

The multiple jet control is also employed for the external protection of parts of buildings where open electrical apparatus is contained. In such portions one or more multiple jet controls are provided, with the lines of open distributors surrounding



**Lines of sprinkler heads in an Oldham spinning mill.**

the room on the outside. If a control opens water does not fall on the electrical machinery, but is discharged around the room in which the fire is contained, while the alarm is sounded and help is obtained.

A form of sprinkler protection used on the outside of buildings in narrow city streets is the drencher system. Fire is readily transmitted from one building to another if the roadway is narrow. Drenchers are simply a type of sprinkler head erected on the outside of walls and along the edge of roofs, so arranged that heat from a fire in adjoining premises will cause them to open and guard the protected building against the entry of flames by wetting its exterior. They are usually provided over doors and windows, and will seal off a building from its burning neighbour.

A recent serious fire destroyed an old shop building in a busy London street, separated from a modern store protected by drenchers by a passage way only 8 ft. wide. Little more than the walls of the old building remained after the fire, but the store was unharmed. The only damage indeed was to a few panes of glass, which were cracked by heat before the drenchers opened.

Although modern sprinkler installations are extremely efficient they can be rendered ineffective if the water supply is prematurely turned off. Cases are also recorded of serious fires in sprinklered buildings where the water has been turned off at the main stop valve for repairs, or for other reasons, the fire breaking out before the water has been restored to the installation.

All classes of commercial and industrial premises are protected by sprinklers, not only in Britain but throughout the world. Shops, warehouses, factories, garages, theatres and cinemas are only a few of the many risks where sprinklers are found. Before the war the average cost of fires controlled by sprinklers was about £60 each. Without their protection a factory with its entire contents may be reduced to ruin in a few minutes.

In 1945 automatic sprinklers saved a factory we were trying to destroy! A celluloid factory at Castiglione Olona in Italy was attacked by four allied fighters, who fired thousands of rounds of explosive and incendiary bullets into the factory, which was full of celluloid waste and chips. At least 25 separate fires were started, but when the works fire brigade left the shelters after the attack they found that sprinklers had extinguished every fire.

**The Great Clock of Bradford**—

(*Continued from page 454*)

tunes is available.

The carillon machine is fitted with a count-wheel, which is stepped in the same way as those of the chiming and striking units, and this action automatically switches off the small driving motor when the tune has been played. All the other controls, such as those governing the starting and stopping of the compressor, and the time at which the carillon plays, are also fully automatic. The speed at which the carillon barrel rotates is adjustable to suit varying melodies, the correct setting being obtained by altering the position of the belt linking the motor to the reduction gear. Both the driving and driven pulleys have grooves of several differing diameters to enable this to be done.

In addition to the carillon machine, a small keyboard is provided, so that the carillon can be played by hand. To bring this into action, it is only necessary to operate a simple switch, which transfers the control of the relay circuits from the machine to the keyboard.

The chime of bells on which the carillon machine plays have been re-hung to suit the new equipment, and the position of some of them has been slightly altered, but no other change was necessary. The dials of the clock were also re-glazed and reconditioned, and an improved method of illumination has been fitted at their centres, in order to render them more legible at night.

The master-clock, which controls the timekeeping of the whole installation, is a battery-operated timepiece, fitted with a seconds pendulum having an "Invar" rod. It is located in a room at the foot of the tower, so that it can be easily observed, checked, and adjusted if necessary.

The whole clock was constructed and installed by Messrs. Gillett and Johnston Ltd., of Croydon, Surrey, and is maintained by Mr. W. Barton, F.B.H.I., Clock Superintendent to the Borough of Bradford, and the staff of the Clock Department. Thanks are due to both the firm and Mr. Barton for their kind assistance in the preparation of this account, and for permission to use the illustrations reproduced.

**Electric Telegraphs for Ships**—

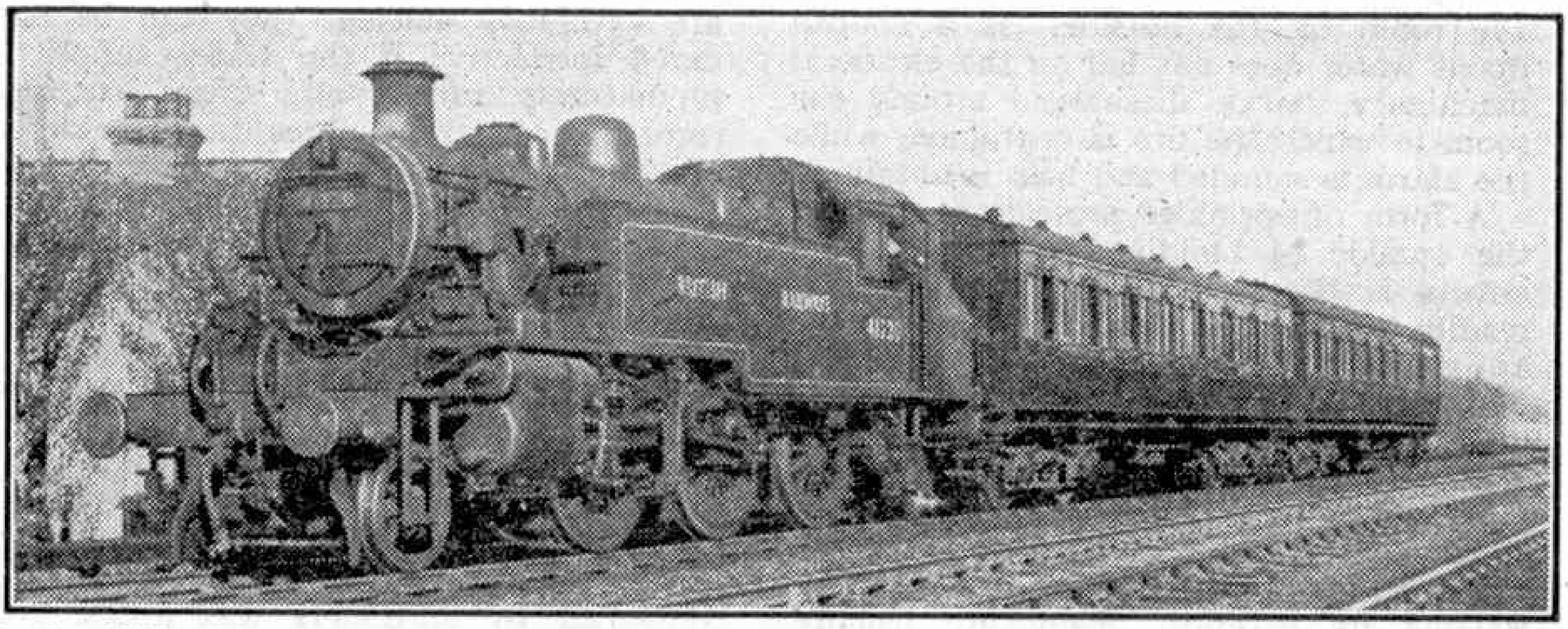
(*Continued from page 461*)

coupling connections. The engine room instrument is similar in appearance to the bridge instrument except that in place of the column it is provided with fixing lugs for mounting in any convenient position on the starting platform.

The usual reply bell is provided on the bridge instrument, and the engine room instrument is equipped with a loud sounding bell, and in the case of twin engines with a different tone for the port engine from that of the starboard engine. The latter bells are controlled by a relay with a switch in circuit fitted with holding on contacts, so that the bells will ring continuously until the circuit is opened by the movement of the handle of the instrument, sending the reply signal back to the bridge telegraph. This feature is a great advantage, because should the order be changed and the engineer on watch is not on the starting platform at the time, the warning is continuous until he acknowledges the order.

Since the introduction by Siemens Brothers of this type of electric telegraphs they have been fitted on board a large number of ships of all classes, among them the biggest ocean liners, "*Queen Mary*" and "*Queen Elizabeth*." They are also becoming popular on smaller vessels such as fishing trawlers, colliers, coasters and many classes of sea-going cargo vessels.

For the information in this article we are indebted to the "*Engineering Bulletin*" of Siemen Brothers and Co. Ltd.



**London Midland Stanmore branch train approaching Harrow. The engine is light 2-6-2T No. 41220, specially fitted for push-pull working. This and the lower photograph on the next page are by C. R. L. Coles.**

# Railway Notes

By R. A. H. Weight

### The European Timetable Conference

For many years, apart from wartime, annual international conferences have been held to discuss changes in through passenger train services and to make decisions on their continuance, development, acceleration and so on, for many of them run through two or more different countries on the mainland of Europe. Since 1923 an established organisation has provided for meetings that are usually held in different countries in turn, the administration in the main being in the hands of the Swiss Federal Railways. In 1948 the conference was held at Cracow, in 1947 at Istanbul, and in 1949, for the first time in Britain since 1931, at Brighton.

Over 20 nations or administrations were represented, railways, shipping and airways all being concerned, making an attendance of about 170 executive officials, including representatives of international restaurant and sleeping car companies. British Railways of course are important members in view of the rail and steamer connections provided between England and the Continent.

It was decided to accelerate next year, among others, the "*Arlberg-Orient Express*" between Paris and Vienna, several through expresses in Italy, and the "*Simplon-Orient Express*," which connects France with Belgrade, Istanbul and other cities of the Near East. Through carriage and re-marshalling arrangements were also decided upon, together with many other travel features which, if circumstances permit, will facilitate the movements of the business or holiday passenger in the coming year.

A special Pullman car train to Brighton conveying Continental visitors to the conference from one of the Kent Coast ports was observed passing through Hastings hauled by a Maunsell 2–6–0 locomotive.

### Centenary of the M.S.J. & A.

The initials above stand for Manchester, South Junction and Altrincham Railway, which has just celebrated its centenary. It is a busy and important line near Manchester, being indeed one of the principal suburban and connecting-link routes in the vicinity of that city, passing Old Trafford of cricket fame, and running south-westward into Cheshire. In earlier years the joint owners were the L.N.W.R. and the G.C. (formerly M.S. & L.); after grouping in 1923 they were the L.M.S. and L.N.E.R., each company being responsible for operation of the line in turn. Now it is controlled by the L. M. Region and electric trains on the overhead wire system between Manchester and Altrincham run frequently.

Numerous steam passenger or freight workings with L.M.S. or L.N.E.R. type engines traverse all or part of the line, so that a good deal still remains of the varied locomotive interest for which the "South Junction" has long been famed. The local passenger services enjoy a high reputation for punctuality.

The London Midland Region now possesses a two-car diesel-propelled articulated unit comprising repair and maintenance van and staff and messing coach, to which an open truck carrying drums of wire can be attached, for use in connection with the installation or overhaul of overhead suspension equipment on these electrified lines. We hope to include a special article on this unit later.

It may be mentioned here that Midland type 4–4–0 engines, including Compounds, are now sharing Cheshire Lines duties with former G.C. and L.N.E.R. classes.

### Western Tidings

The first ten 0–6–0Ts of the entirely new outside-cylinder type have been completed. These will be described and illustrated in a later issue. The latest allocations known are Nos. 1504–6 at PDN (Old Oak Common). A new light "1600" class of 0–6–0T has been put in hand and 2–6–2T construction is in progress at Swindon. Further inside-cylinder examples of the stout "9400" type have appeared from outside builders, including No. 8402–4 from Messrs. Bagnall's Works, Stafford, and No. 8451, from the Yorkshire Engine Co. Ltd., Sheffield.

No. 7018 "*Drysllwyn Castle*," hauling a 12-coach up South Wales express through from Swansea to Paddington, covered the last 56½ miles from Steventon in 54 min., gaining 15 min. on schedule. Several "King" 4–6–0s are now painted in the latest blue style.

A special train recently conveyed a farmer, his family and staff, household effects, 80 cattle and 200 sheep from Monmouthshire to Oxfordshire, in connection with the removal of a complete establishment, between milking times on Wednesday evening and Thursday morning.

Reviving a pre-war facility, rugs may be again hired by passengers on night trains at principal stations along the West of England main line at a charge of 2/6.

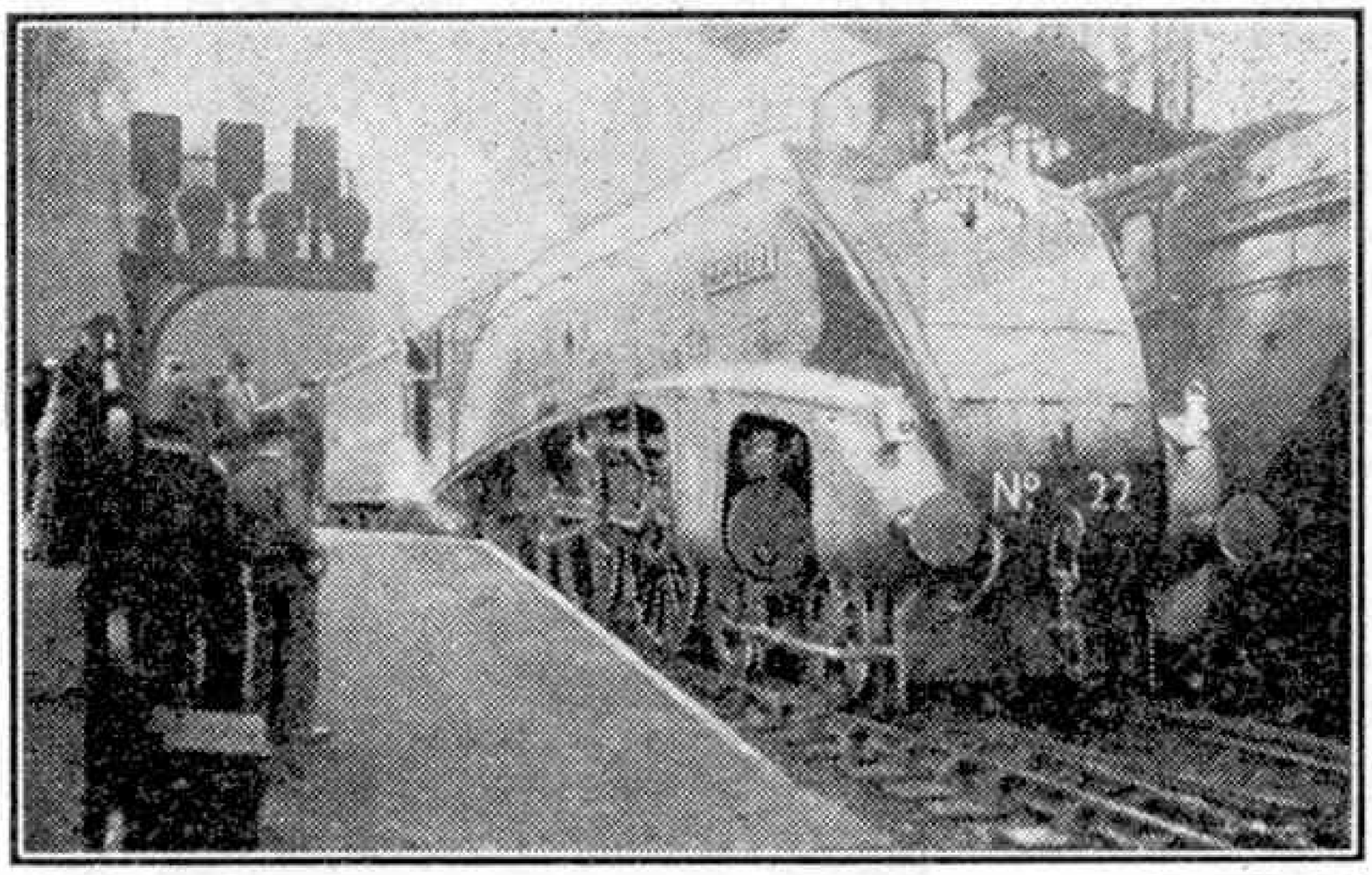
### Scottish Engine Names Restored

Eleven of the 25 N.B.R. 0–6–0s, now classed "J36," which went overseas for service in France or elsewhere during the first world war, have had their commemorative names restored. Some had been removed when repainting took place. The names appear in transfer lettering on the driving wheel

splashers. Those restored are: "*Haig*," "*Horne*," "*Somme*," "*Maude*," "*Allenby*," "*Plumer*," "*Joffre*," "*French*," "*Mons*," "*Gough*," "*Byng*."

### London Midland Regional News

The 39 class "8F" Stanier 2–8–0s returned from the Mediterranean area now being placed in service are receiving numbers between 48012 and 48297.



**L.N.E.R. type streamlined 4-6-2 "Mallard" at King's Cross. In 1938 this engine attained the world's record maximum speed, for steam power, of 126 m.p.h. Photograph by J. Wyndham.**

Some tank and tender engines, including dark green painted express 4–6–0s, are now running bearing the British Railways totem. Small 2–6–2Ts of the 412xx series are appearing from Crewe in considerable numbers. Class "4" 2–6–4Ts work many of the semi-fast main line trains between Euston and Northampton, or Rugby, etc., which cater for outer suburban traffic. New class "4" 2–6–0s are running on the Furness line.

A reminder of many local workings in the past was the recent sight of Webb 2–4–2T No. 6654, operating the push-and-pull service between St. Helens Junction and Town (Shaw Street). These engines have a number of features in common with the famous "Jumbos," the small L.N.W.R. 2–4–0s which rendered such sterling service in the past.

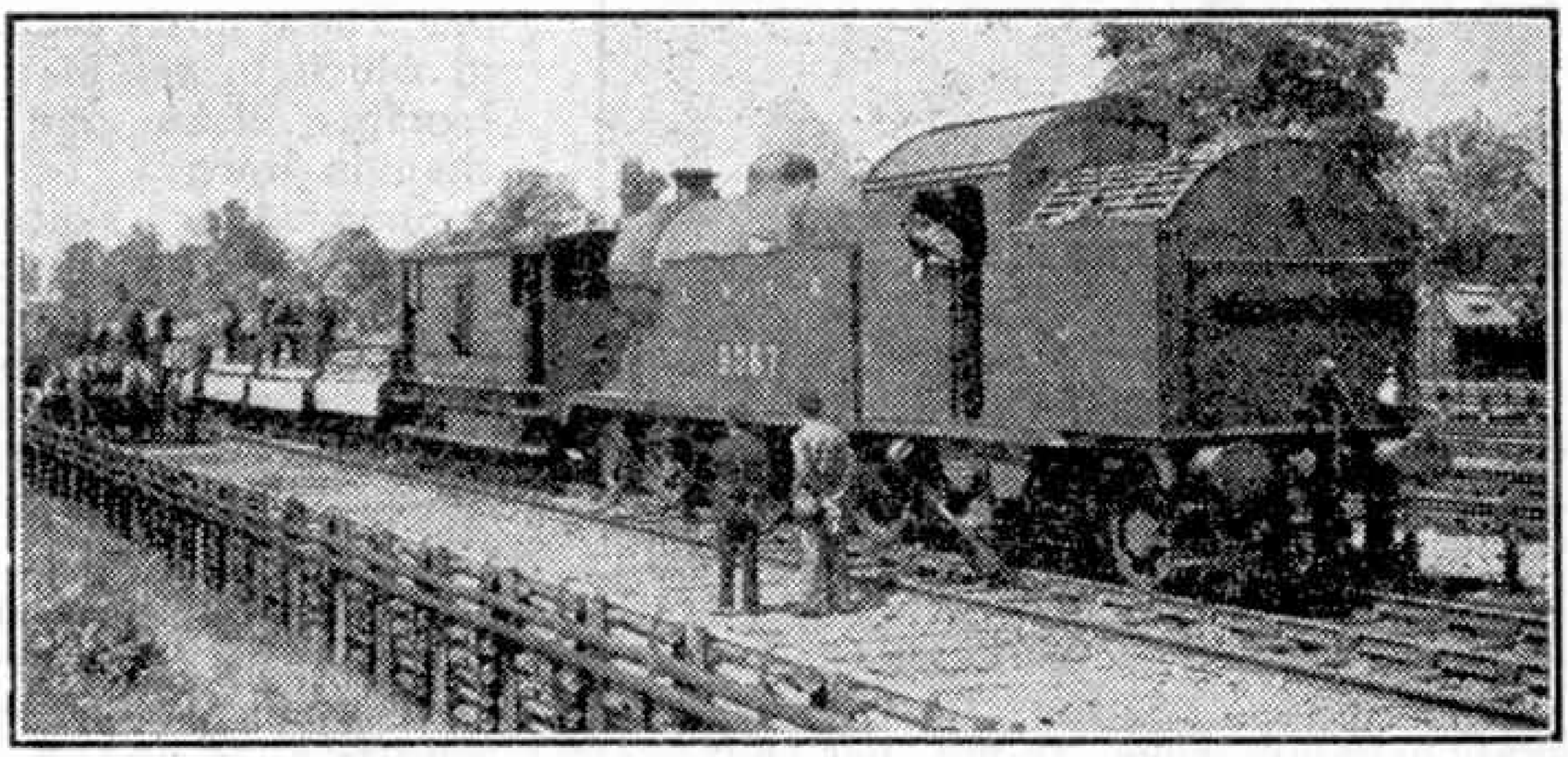
The writer has recently logged some most enterprising express runs on the Western Division. Reboilered "Patriot" "6P" 4–6–0s with double chimney figured in the first two, with Bushbury (Wolverhampton) engines and men, timed between Euston and Coventry. Northbound with a load of 13 coaches, about 400 tons full, No. 45526, "*Morecambe and Heysham*" covered 55¼ miles in the first hour before a severe engineering slack between Roade and Blisworth. Rugby was passed with 1½ min. in hand and in spite of a succession of signal checks the arrival at Coventry was comfortably to time: the 94 miles were covered in rather less than 107 minutes.

With a slightly lighter load on a Sunday train back to London, booked to call at Rugby, Northampton and Bletchley, No. 45536 "*Private W. Wood, V.C.*" started from Coventry and from Rugby some 11 min. late, attained 75 m.p.h. on the descent before Northampton, and then ran briskly on to Bletchley after regaining the main line. Combined effort by footplate crew and station staffs caused the departure from Bletchley to be punctual, but "slow line" travel was now required over the 6½ miles to Leighton Buzzard on account of relaying operations on the main line. Downhill after Tring, on the main line again, over 70 was averaged for 20 miles with a maximum of 78 m.p.h. This energy would have ensured an early arrival, despite a special stop at Willesden to set down, but signal delays occurred owing to tracks outside Euston being closed for repair. Still we arrived in No. 12 departure platform only 1 min. late in spite of all delays.

The first "7P" 4–6–2, No. 46200 "*The Princess Royal*" of Edge Hill shed, Liverpool, in charge of London driver Bassett, with 12 coaches including dining and kitchen cars, or about 400 tons, brought the 12.5 p.m. from Euston into Lime Street, Liverpool, 5 min. before advertised time, although delays totalling 15 min. had supervened. A merry 80 m.p.h. was attained on the descent from Tring, and high speed was soon reattained after long slowing north of Bletchley, so that by Tamworth, 110 miles out, we were over 4 min. early. Six miles further on, at historic Lichfield, came a sudden signal stop, due to a goods train ahead having developed a slight defect. This halt lasted for 3½ min.; there were two more out-of-course slowings before Crewe, with a maximum speed of 78, yet the arrival at the great junction station, which should have been the only stop, was only 2 min. behind time, though delays to that point had totalled about 13 min. Two more extra slowings and further recovery of time completed a fine trip, but with a .load less than usual to Crewe.

* * * *

Recently completed L.N.E.R. type "A1" 4–6–2s Nos. 60154–5, painted blue and having roller-bearing axle boxes, are stationed at Gateshead. They are often seen on the night "*Scotsman*."



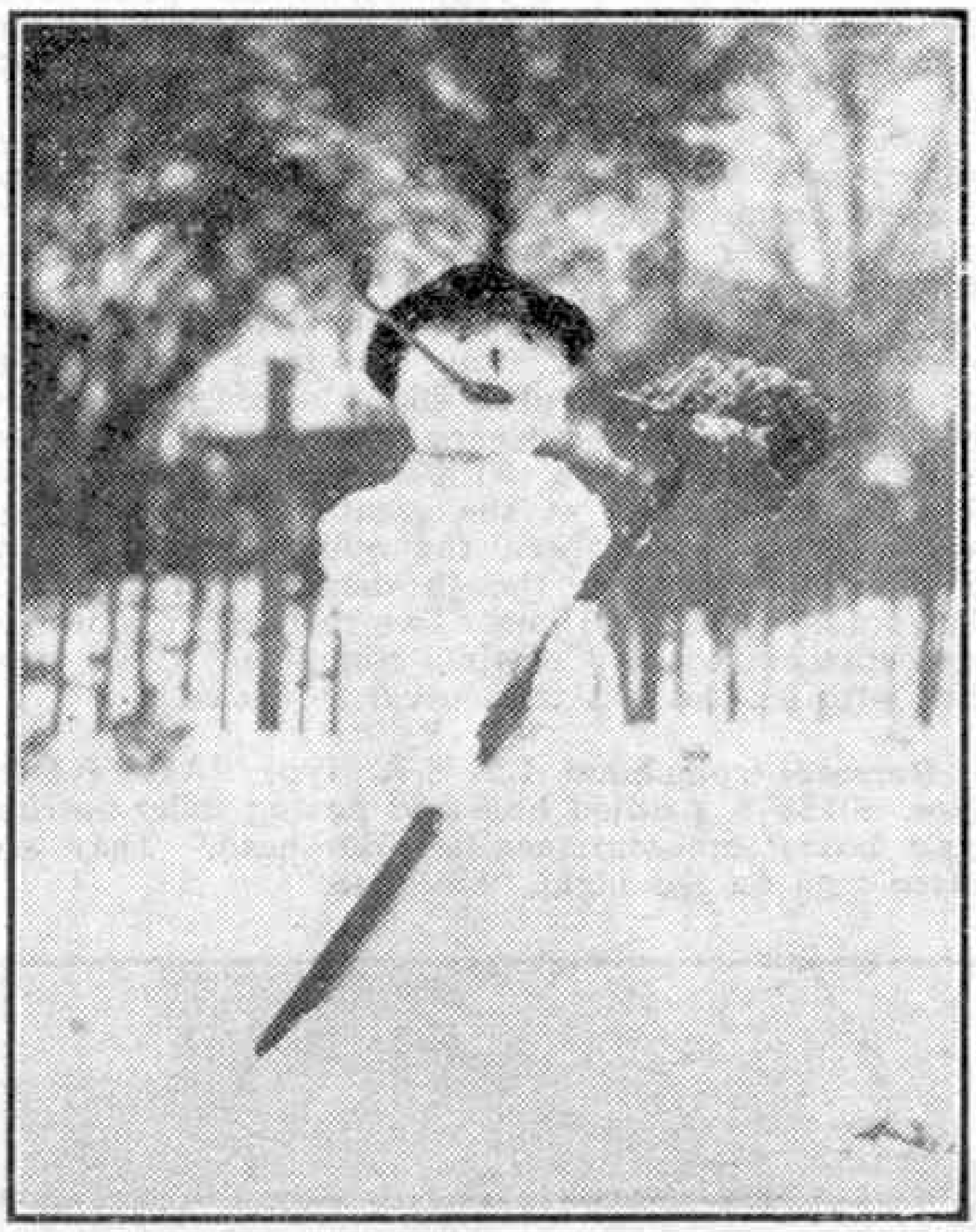
**Permanent way operations in progress on the former L.N.E.R. (G.C.) line near Harrow-on-the-Hill. The materials train is in charge of one of the large inside-cylinder 2-6-4 tanks of Great Central origin.**

# Photography

## Snow Scenes

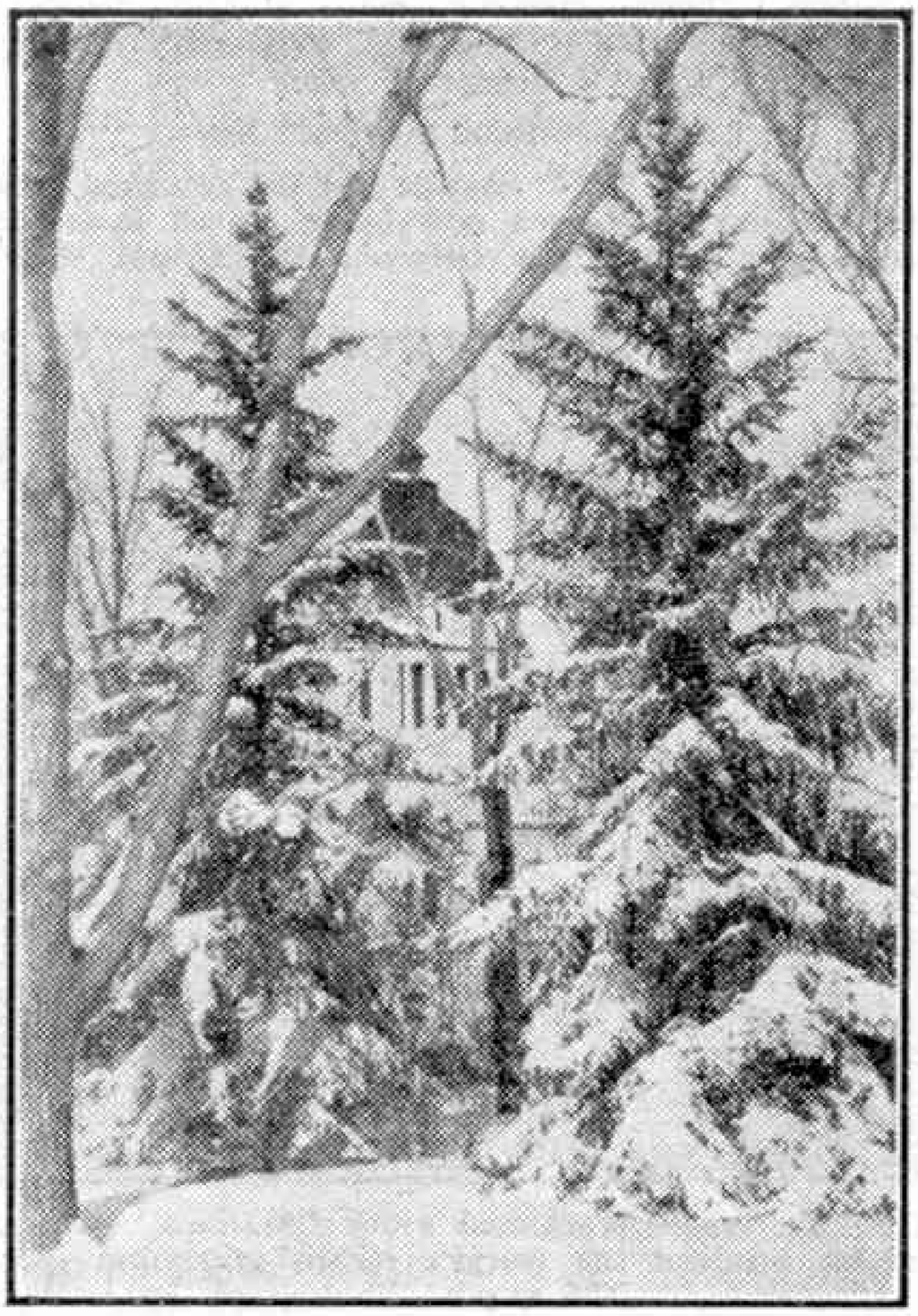
THIS is the time of year when we begin to wonder if we shall have an old-fashioned "white" Christmas, with a mantle of snow giving town and country that fairyland appearance that we see on Christmas cards. In this country a normal Winter does not bring many such opportunities, and therefore we should be ready to deal with those that do occur.

Almost any kind of camera will do, and panchromatic films or plates are recommended. Owing to the large amount of light reflected by the snow and the general absence of heavy shadows, the exposure required to produce a good negative is comparatively short for this time of the year. It is best to ascertain it from an exposure calculator or meter.



"Jimmy," the snow man. Photograph by G. Beabey, Portsmouth.

The most successful snow pictures, especially in a town, are taken in the morning when the Sun's rays are breaking through the mist but are not yet warm enough to melt the snow off the roofs or the powdery coating from twig and branch, and when traffic has not yet turned the clean snow to dirty slush. At this time even a town garden will provide better pictures than will be got by going farther afield later in the day. In photographing most snow scenes a sharply-defined foreground object, such as a building or tree, should be included.



A Winter scene in the grounds of the Provincial Parliament Buildings, Regina, Sask., Canada. Photograph by D. F. Sanderson, Regina.

Readers living in the country will not be slow to make the most of scenes featuring trees and hedges in which the snow-covered branches and twigs produce a striking effect. Then, too, there are the old cottages made unfamiliar by the snow on their thatched roofs; the village church likewise capped in white, and so on. The country reader also has more time in which to get his pictures, as the snow remains clean and undisturbed longer than in town.

Snowballing, skating and sledging are in many ways first-class subjects for the photographer. It must be borne in mind, however, that there is a great deal of very rapid movement in such subjects, so that a fast shutter speed is required. Bright sunshine in the middle of the day is therefore essential for reasonably full exposure, and of course sunshine is needed to give sparkle to the picture. The snow man makes his appearance in town and country alike, and at least one good portrait of this short-lived individual should be got for the album.

# Special Service for Hornby-Dublo Owners

## VEHICLES WITH THE NEW COUPLINGS

The automatic couplings fitted to post-war Hornby-Dublo Trains will not engage with the flat couplings fitted to trains of pre-war production. This means that many owners of Hornby-Dublo Trains who wish to add to their rolling stock find themselves unable to do so. "*M.M.*" readers will know that the change in the design of the couplings has been made necessary to bring into use the new Uncoupling Rail, which has enormously increased the real railway operations that can be carried out on a Hornby-Dublo layout.

In the "*M.M.*" for December 1947 we stated that a scheme was in preparation whereby owners of pre-war Hornby-Dublo Trains could return to Meccano Limited their rolling stock fitted with the old couplings, and obtain, on favourable terms, corresponding vehicles with new couplings. This scheme has now been put into operation. Those who wish to take advantage of it should write to Service Department, Meccano Limited, Binns Road, Liverpool 13, giving details of the vehicles they wish to exchange. They will then be told how much the transaction will cost them.

Two points should be noted. First, the scheme applies to the Hornby-Dublo Tank Locomotives, but not to the pre-war "*Sir Nigel Gresley*" Locomotive. It does apply to the tender (rear end) of the old "*Sir Nigel.*" Second, as the Articulated Unit is not now in production, any Units of this kind will be replaced by two separate L.N.E.R. D1 Coaches.

Finally, for information about this new scheme write direct to Meccano Limited, not to Dealers.

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**Haunted Homes and Highways**—(*Cont. from p. 451*)

murdered by his master, a member of the Gilby family. The crime was undiscovered until workmen started to remove some of the soil from the grounds of the Gilby residence. The horses drawing the cart containing the soil came to a halt outside St. Mary's Church, Beverley, and refused to go any further. Suddenly the cart tipped up and a skull rolled out.

The murder was thus revealed, and there is a tradition that on the anniversary of Jocelin's violent death a phantom coach rumbles through the streets of the town. It is driven by a skeleton, and another skeleton sits inside. The apparition is that of the valet and his murderer, the assassin being compelled to drive his victim to St. Mary's Church burial ground once a year, as a punishment for denying him a decent burial after the murder!

There are other spectral coaches travelling occasionally along Britain's highways—so legend says. The most celebrated is that of the Turbervilles, which goes careering up to Wool Manor House, on the Wareham-Weymouth road, the home of the Turbervilles, who greatly enriched themselves by accepting plunder when Henry VIII turned the monks from the monasteries 400 years ago. The illgotten wealth is reputed to have brought a curse on the family. Whether the phantom coach is a result of that curse, or whether it originated when a later Turberville slew a friend in a coach, is undecided. But the vehicle is stated to contain a corpse, and to haunt the neighbourhood of Wool Manor House at Yuletide.

Some of these haunted houses can be visited by the public. Temple Newsam is open daily, and Burton Agnes Hall is open each Thursday during the summer months, at a small charge.

A further house with a wraith is East Riddlesden Hall, on the outskirts of Keighley. It is owned by the National Trust, and its spectre is that of a merchant who came to buy wool in the days when the hall was the home of the Murgatroyds. He was murdered for the bag of gold he carried—some accounts say the crime was committed by the family butler. Anyway, the victim's ghost is stated to peer out through the big circular window over the porch.

If you want a really Christmassy ghost story, however, there is the spectral monk of Kersal Cell, an old black-and-white house at Salford, Lancashire. The house occupies the site of a monastery; hence its name and its apparition. Its Yuletide associations lie in the fact that at Kersal Cell lived John Byrom, who wrote the words of the Christmas hymn, "*Christians, awake.*" The verses were, indeed, penned in his study at Christmas 1745.

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**Hedgehogs Make Good Pets**—(*Cont. from page 465*)

certainly the piggy bright eyes have an impish and malignant look, into which it is hard for the human eye to stare. Some countrymen say that it is impossible to poison hedgehogs, and no doubt this idea is because they seem able to eat with impunity the cyanide of potassium commonly used in the destruction of wasps' nests.

It is quite true that hedgehogs eat our only poisonous snake, the adder. Though the viper often puts up a good fight, it really has not much chance against the urchin's battle technique. The adder strikes a futile blow at the prickles of its opponent, and in doing so spills a lot of precious poison. If the action gets too hot, the hedgehog simply rolls up till the snake wears itself out. Then suddenly it comes to life, rushes inside the reptile's guard, and crushes the spine of its victim just behind the skull with its razor-like teeth. It then sits down, and slowly devours the snake inch by inch!

Even in this enlightened age farmers sometimes accuse hedgehogs of sucking the milk from cows lying out in the fields at night. But if one looks closely at the cut-away shape of the under jaw, it will be seen that it is almost impossible for a mouth thus formed to take hold of a cow's teat. Milk often oozes out of the udders of cows lying down, and the warm sweet smell of it on the ground is soon picked up by the hedgehog's keen snout. This is the true explanation of hedgehogs being so often found in the vicinity of milking herds.

By the number of hedgehogs seen dead on the main roads as a result of being run over by cars, one might suppose that these short-legged animals are slow jay walkers, but in actual fact they are capable of a speed of two-and-a-half miles an hour. With cars the hedgehog always makes the not unnatural mistake of believing that it is impregnable if it rolls up. The little beast hears the car coming, rolls up instead of running, and the fatal accident occurs. In spite of all these night casualties hedgehogs are on the increase all over the country.

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**Making Gramophone Records**—(*Cont. from page 479*)

it. After passing exhaustive tests the record is put into production.

Shellac, resin, copal (the juices of certain tropical trees) and other ingredients are mixed in machines until a fine texture is achieved. The refined material passes through heated rollers, which grade it to uniform thickness and mark the sheets into suitable sizes for either 10-inch or 12-inch records. When cool, these slabs, or biscuits, as they are called, are broken off and taken on trolleys to the press room, where the press man has already fixed two matrices in position from which to prepare a double-sided record. First he places the required label on the centre of each matrix, then from a heated slab beside his press he takes one of the "biscuits," rolls it into a ball, and places it on the centre of the lower matrix.

The press man then pulls a lever and the two matrices close with a relentless pressure of nearly 100 tons. As the pressure is applied steam is circulated behind the matrices, and this is followed up by water cooling. When the press is opened, there is the familiar, shining disc, imprinted with sound grooves numbering 130 to the inch. The disc is polished, the edges are buffed, and after a final inspection the new record passes to the stores to await despatch.

# Crop Spraying by Air

By John W. R. Taylor

EVER since Man first learned to cultivate the soil he has had to fight a continuous war against pests, not the small two-legged variety which are so numerous near orchards in the Autumn but the very much smaller insects and diseases which can kill a whole crop long before it is ready for harvest.

For centuries the locusts, flies and beetles had their way, their ravages combining with drought and flood to destroy by famine hundreds of thousands of people all over the world. Not until the closing years of last century, in fact, did science bring much aid to the farmer, placing at his disposal efficient new insecticides and weed killers to protect his crops. Even then it was a slow business to spray or dust the whole of a large field by hand, and impossible to ensure satisfactory, even coverage.

The advent of horse-drawn and then tractor-drawn spraying equipment helped enormously, but often at the cost of a reduced harvest, for the wheels of the vehicles inevitably crushed a proportion of any interwoven or wind-laid crop. What was needed was a spraying machine which made no tracks, and the answer was obviously an aircraft.

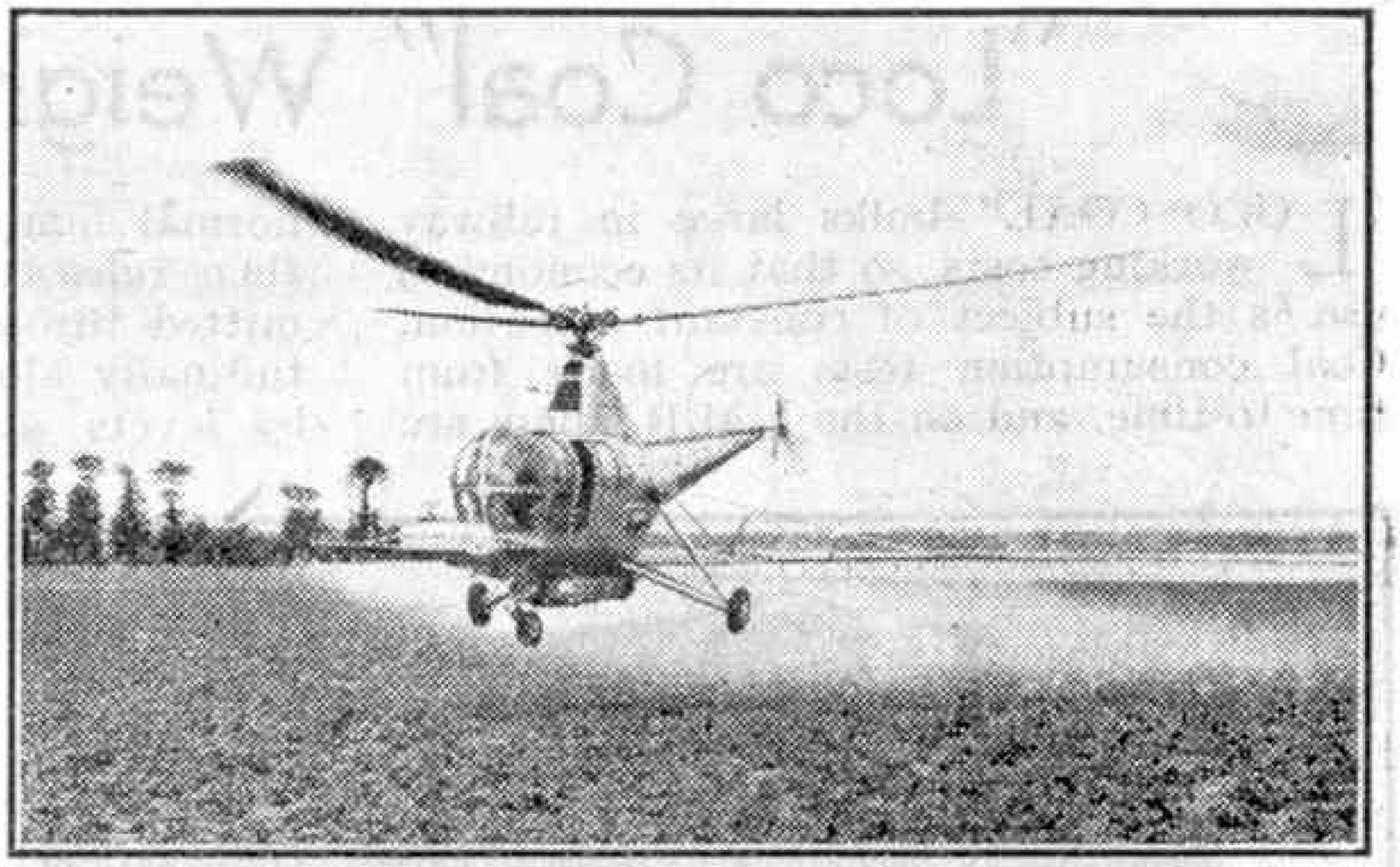
As a result, several attempts were made before the last war to develop an effective method of aerial crop dusting, often with the help of military air forces, for it was obvious that an aeroplane which could spread a layer of weed killer over a field of wheat could easily do the same thing with poison gas over an enemy army! Many difficulties were experienced. It was often impossible to find a landing ground near the field to be sprayed; the aeroplane's comparatively high speed resulted in a lot of wasted time and petrol while it turned after each run over a field, and such turns were dangerous in hilly or wooded country; even worse, propeller slipstream often dispersed the insecticide dust cloud. Despite all the drawbacks, however, aerial crop dusting proved of undoubted value where speed and absence of tracks were of primary importance, especially as relatively cheap light 'planes could be adapted easily for treating anything up to 500 acres a day.

Then, in 1940, Igor Sikorsky flew his first helicopter, and the whole picture was suddenly changed, for here was an aircraft which could turn in its own length and operate from almost any small space in town or country. Britain's leading commercial crop spraying experts —Pest Control Ltd., of Bourn, in Cambridgeshire—were quick to recognise this fact, and with the help of British aircraft designers set to work to produce a form of spraying equipment which could be fitted to a helicopter. Incidentally, this distinction between spraying and dusting is important. Most of the work with light 'planes had been done with insecticide dusts, spilled from hoppers in the aircraft, and this dust was very much at the mercy of wind and slipstream. Pest Control planned to use a fine liquid spray of dissolved insecticide, which could be spread more evenly and would tend to "stick" better to the crops.

This development work took time, and it was not until 1946 that Pest Control were able to show the world what a spraying helicopter could do. All the usual disadvantages of aerial spraying

**The "Spraycopter" Mark I, in which the spray-bays extend 17 ft. on each side of the fuselage nose. The illustrations to this article are by courtesy of Pest Control Ltd.**

disappeared. The helicopter's mobility enabled it to operate anywhere and to travel from job to job with little loss in transit time. It could be used when ground equipment was immobilised by rain-sodden fields. What was more, instead of dispersing the spray laden air, the downdraught from the rotor tended to blow it down with such force that it rebounded from the ground, coating the underside of the leaf surfaces as well as the tops. Finally, despite the high initial cost of the helicopter, and the expense of training its highly skilled crew, Pest Control proved that air spraying need cost only a few shillings more per acre than ground spraying.



**Crop spraying with the Mark II machine which, like the Mark I version, is a Sikorsky helicopter.**

It took two more years to get the scheme ready for commercial use, by which time Westlands had started to build the Sikorsky S-51 helicopter under licence in Britain. So this aircraft was chosen as the "Spraycopter" Mark I, and adapted to carry 70 gallons of chemical in a tank under its fuselage, the spray being discharged through spray bars and nozzles extending 17 ft. on each side of the nose.

Pest Control decided to send out to each job a complete field unit, consisting of a "Spraycopter" and pilot, a tanker lorry containing spray chemicals and aviation fuel, two or three flag men, a supervisor and an engineer. Flying speeds varying from about 12 m.p.h. for tall crops to 30 m.p.h. for field crops were found to be best, the pilot being kept on the "straight and narrow" by the flag-men, using radio and Aldis lamps.

The first season's operations suggested a few improvements and these were built into the "Spraycopter" Mark II, illustrated on this page. It is basically similar to the Mark I, but has its spray bars behind the main wheels, and a compressed air system to force the spray chemical through the nozzles. The compressed air bottles are carried on the "frying pan" which can be seen protruding beyond the aircraft nose.

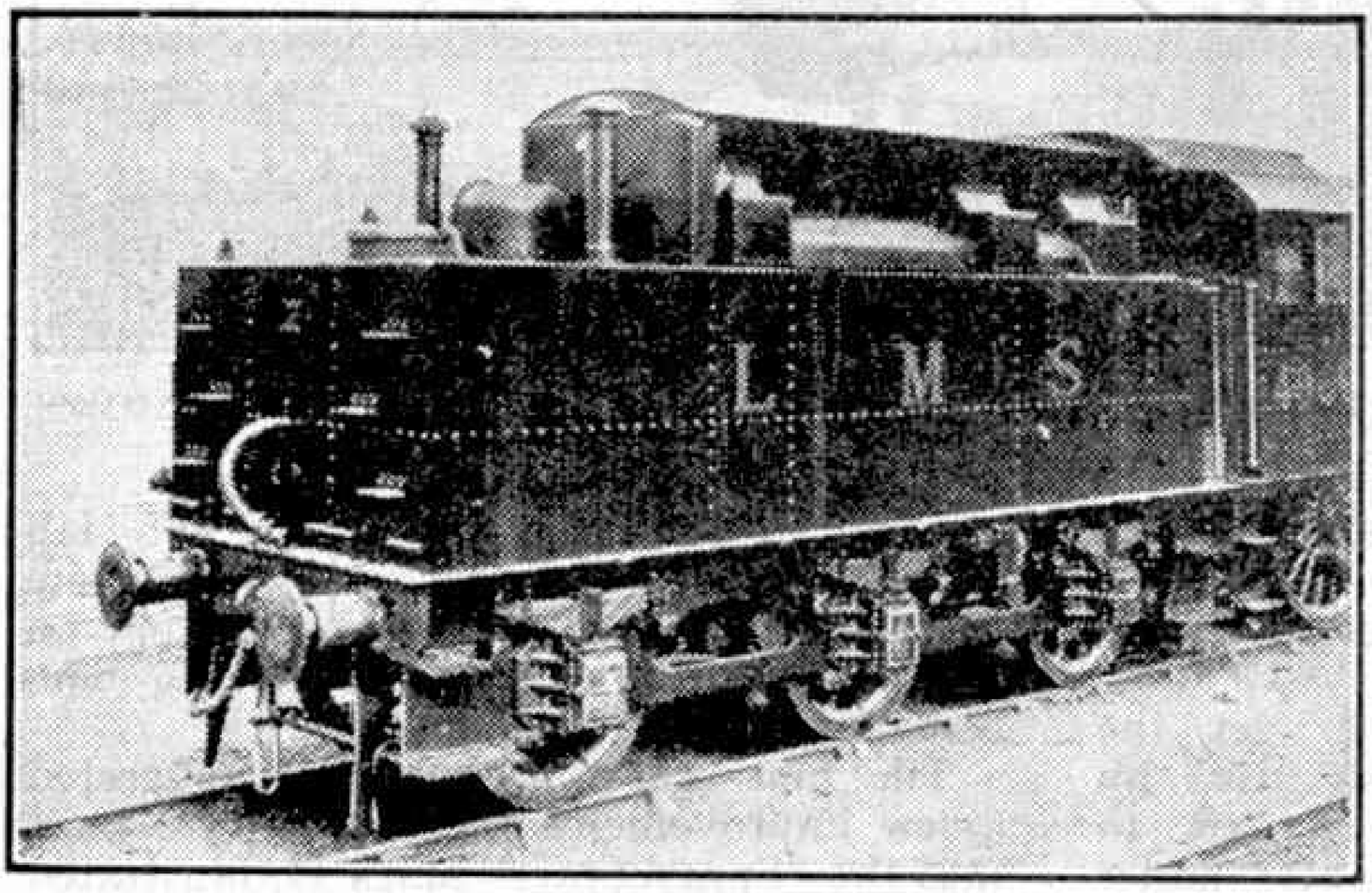
Pest Control have operated three of these "Spraycopters" this year with great success. In Britain, a serious outbreak of black fly in the East Anglian sugar beet crop was defeated. In France an all-out battle on the Colorado Beetle saved thousands of tons of potatoes. A "Spraycopter" was even taken to the Middle East to protect Sudanese cotton crops from the Jassid insect. This demonstrates another advantage of the "Spraycopter," for it can be sent out quickly to tropical climates during the British Winter slack season, and this helps to keep operating costs low by spreading them over 12 months instead of only eight.

Chief disadvantage of the "Spraycopter" is its limited load-carrying capacity. But a crop-spraying version of the giant Cierva "Air Horse" helicopter is being developed. So it looks as if there is a bad time ahead for pests!

**A closer view of the "Spraycopter" Mark II, showing the spray-bays behind the main wheels.**

# "Loco Coal" Weighs Itself

"LOCO COAL" bulks large in railway working costs, so that its economical use is the subject of constant attention. Coal consumption tests are made from time to time, and on the L.M.R. there are two dynamometer cars employed in carrying out such periodical tests.



**Self-weighing tender with apparatus covers in position ready for a run. The illustrations are by courtesy of British Railways.**

In these trials a known weight of coal is placed in the tender, sufficient for the test run to be made, and at the conclusion the coal remaining is removed and weighed. The coal used, with suitable allowances for lighting-up and standing time, is related to the units of work done by the engine on the train as recorded by the dynamometer car. Full-scale trials are usually undertaken on only a small number of engines of the same class.

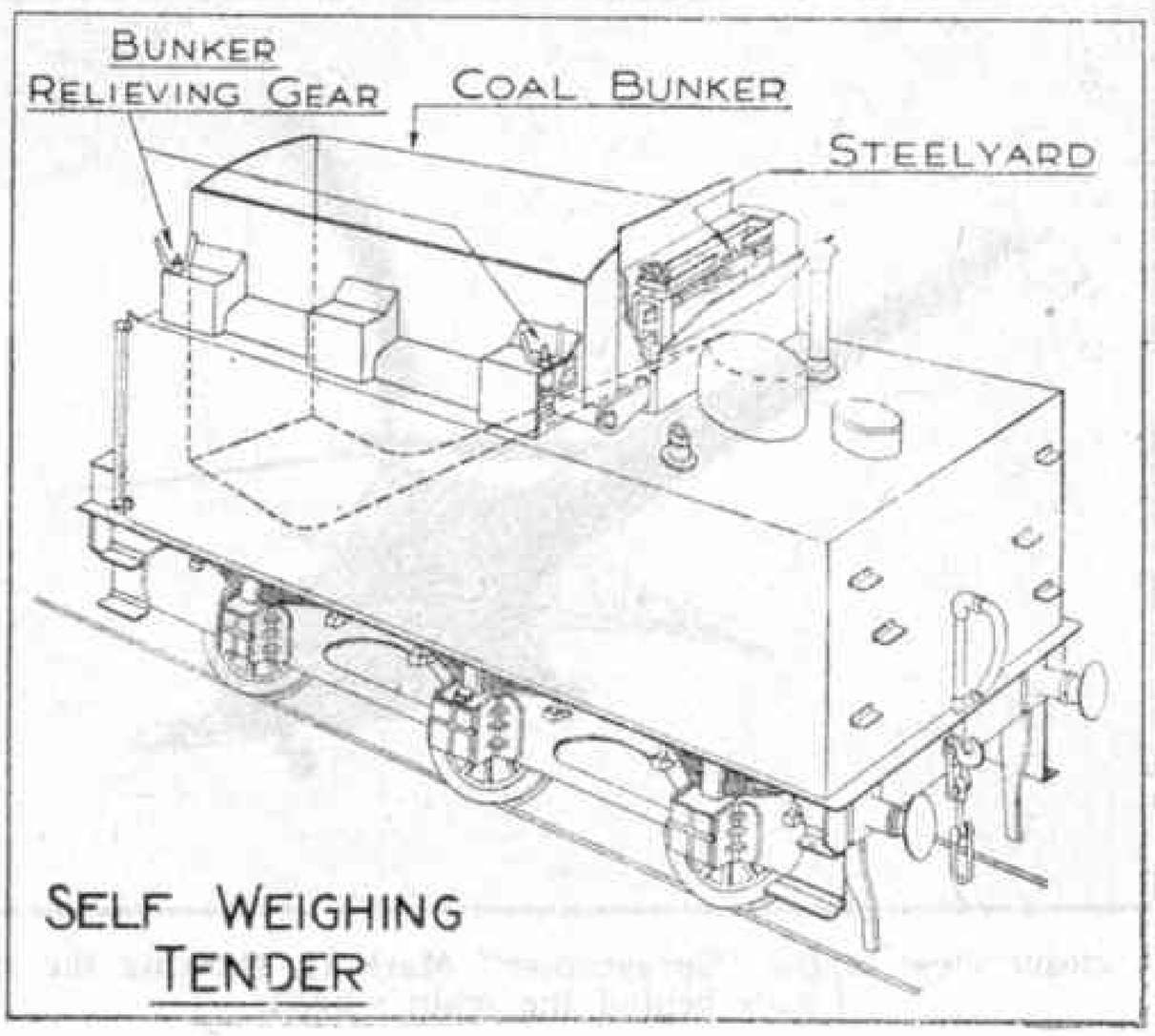
With a view to a closer study of the effect on consumption of methods of firing, of traffic delays and features of present-day operation, together with a closer watch on the effect of the varying qualities of coal, two special tenders with self-weighing bunkers were introduced by the former L.M.S. Each bunker normally rests on six cone seatings on brackets on the tank top and in this position it can be locked, to prevent movement and damage to the weighing mechanism.

In operation, with the bunker in the correct position and all locks engaged, the tender is coaled in the normal manner. The locking devices are then released so that the load is transmitted through two shafts running longitudinally along the tender tank top, and by levers at the rear of the coal space, to a steelyard where the amount of coal can be read directly in tons and quarter cwts. by the usual sliding weights. The locking devices are then returned to their normal positions and the cover that encloses the steelyard is replaced.

Locomotive Inspectors ride with the engines having these tenders whenever they are working a train. Coal weighing is undertaken so that the day's consumption can be split up as desired into that used for lighting-up, shed duties, shunting, working trains, and during any traffic delays which may occur. Variations in consumption due to firing and driving methods can be demonstrated to the crew, and the best means developed for using inferior grades of coal.

The underframes generally, wheels and axleboxes are of the standard pattern for the L.M.R. 4,000 gallon tender.

Following successful experiments with these two tenders, British Railways are to equip nine other tenders with coal-weighing apparatus.



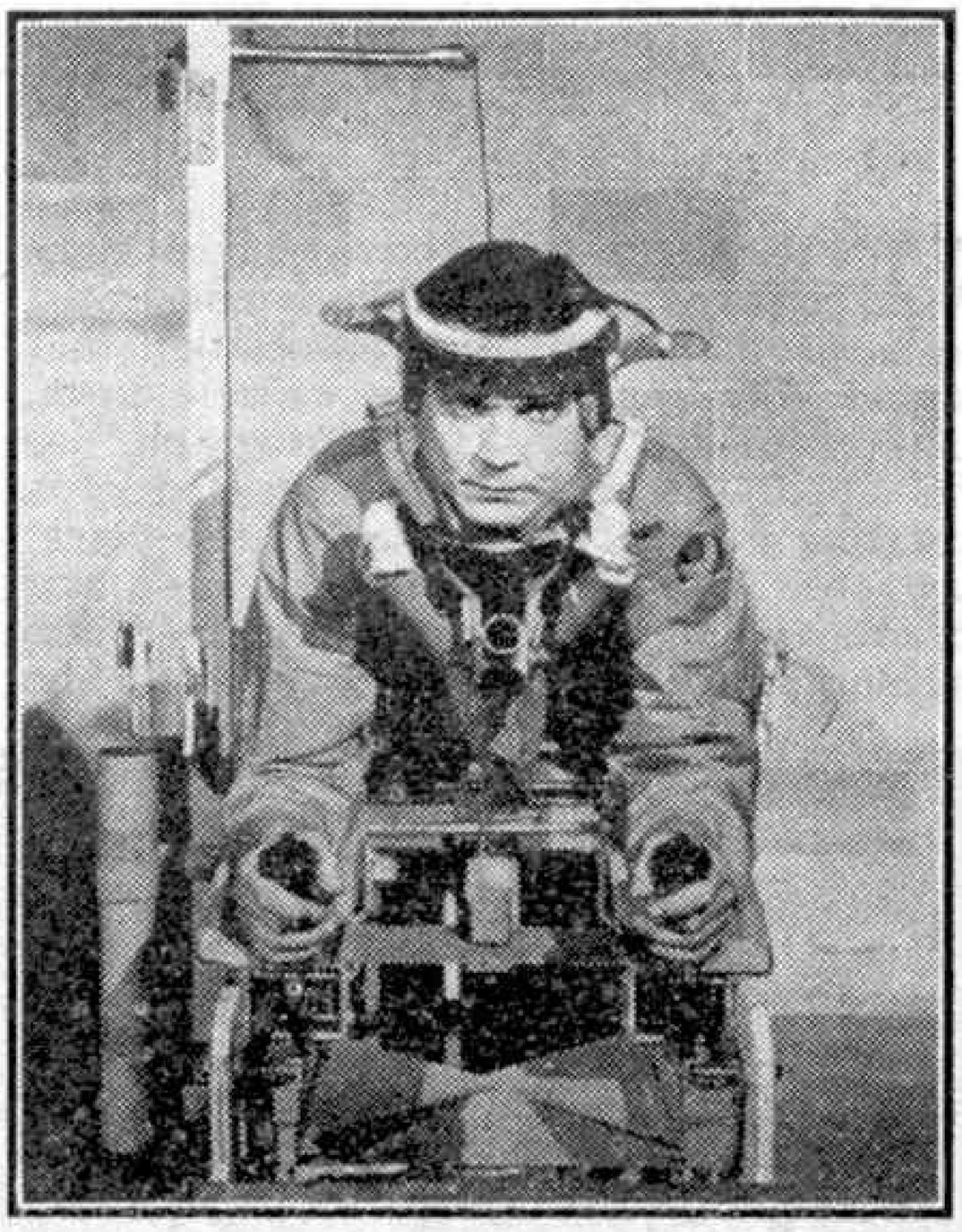
# "The Flying Bedstead"

By John W. R. Taylor

THE unpleasant-looking contraption illustrated on this page is not a new type of electric chair, but the latest fashion in aircraft cockpit design from America. Nor is it as uncomfortable as it looks. In fact, pilots who have tested it at the Aero-Medical Laboratory of the U.S.A.F.'s Air Materiel Command claim that it is far more comfortable than the usual type of pilot's seat.

The need for some form of prone flying position has become increasingly apparent in the last few years, as the speed and range of military aircraft have increased steadily. During the Second World War, fighter pilots often had to spend eight hours perched on a rigid metal seat in a cramped cockpit. To make things worse, they found that centrifugal forces imposed on them during violent combat manœuvres at high speed often caused temporary "blackouts," which were both unpleasant and dangerous. The arrival in service of jet-fighters, with even higher speeds, brought matters to a head.

In an effort to remedy the trouble, the U.S.A.F. Aero-Medical Laboratory evolved the "bed" shown on this page, after tests on a "whirling arm" had proved that a reclining pilot can withstand forces three times as great as those which cause a blackout when he is seated. The bed also promises to solve the fatigue problem, as pilots have remained on it for periods of eight hours without experiencing any sign of backache or other discomfort.

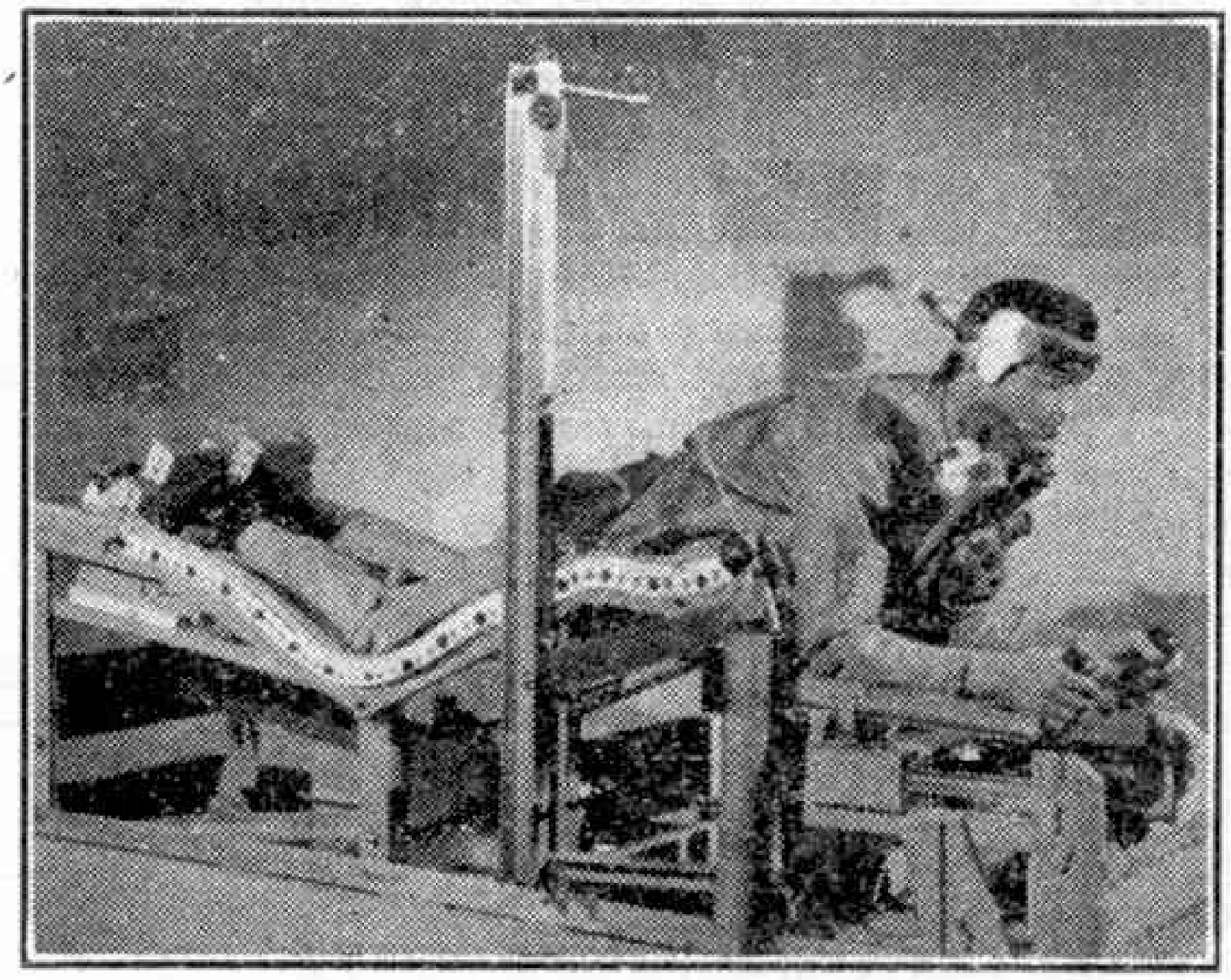


**Demonstrating the prone position pilot bed evolved by the U.S.A.F. Aero-Medical Laboratory. Photographs by courtesy of the U.S. Air Force, Washington, D.C.**

It consists basically of a length of extremely strong nylon netting stretched between two curved side-frames so as to conform to the body contours of an average pilot when supported on it. His head is cradled in an adjustable padded jaw-rest, neck-strain being further relieved by means of a counter-weighted head support which permits the pilot to turn his head even during high-speed manœuvres.

Special controls designed for the prone flying position consist of two movable rubber-padded armrests with adjustable hand-grips, which act as levers for steering the aircraft and incorporate mechanism which ensures ease of control even at high speed. The pilot's feet rest on pedals, which can be connected to either a rudder or brakes.

The prone position will benefit designers as well as pilots, for it requires less space for the cockpit than an ordinary vertical position.

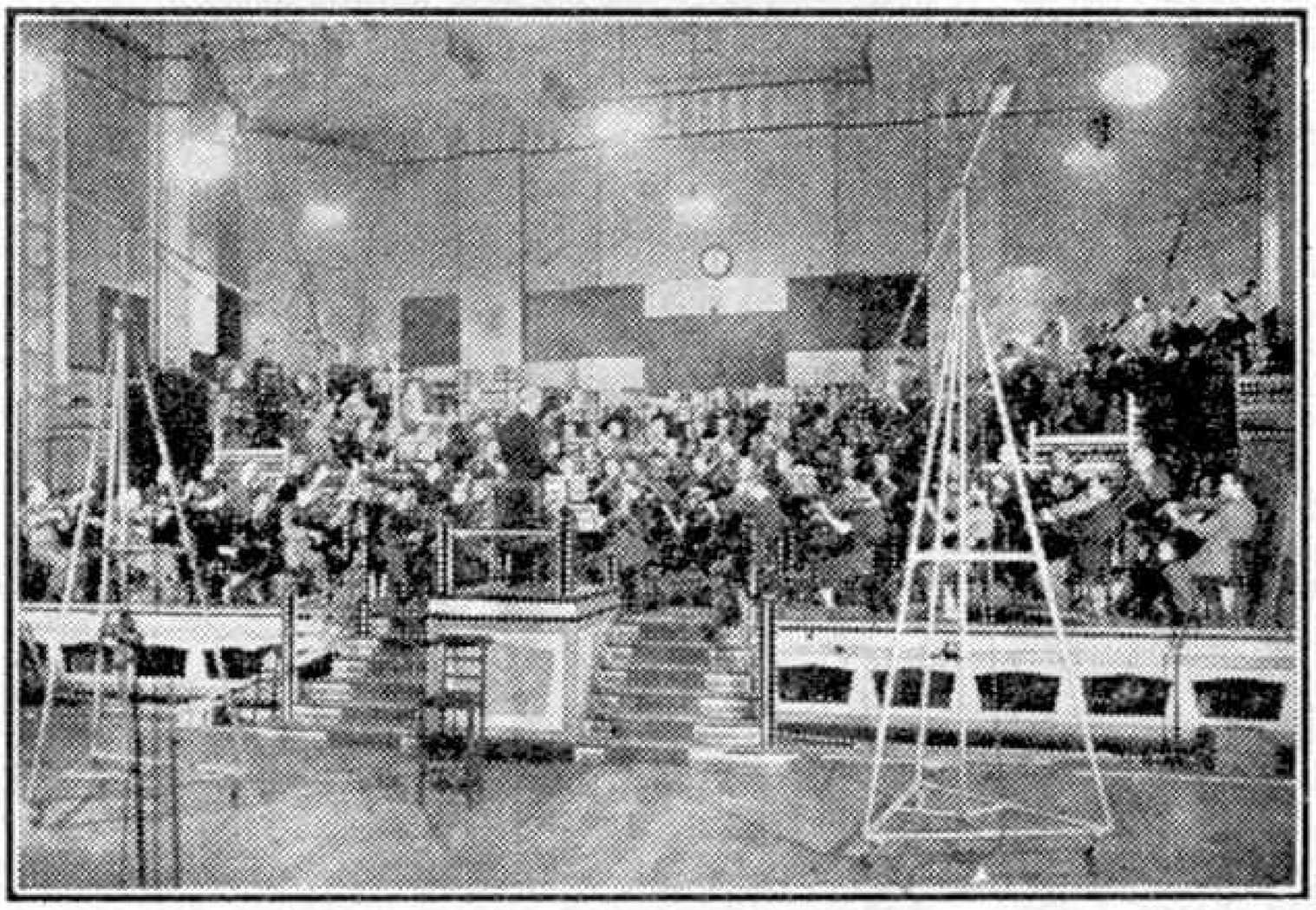


**Another view of the prone position pilot bed.**

# How Modern Gramophone Records are Made

By Trevor Holloway

OVER ninety years have passed since Leon Scott de Martinville demonstrated at a meet of the British Association that sound vibrations could be written down, or "recorded." The "Phonautograph," as his apparatus was called, consisted of a rotating cylinder coated with lamp black. Attached to a diaphragm was a hog's hair bristle and when sounds were uttered into a mouthpiece the bristle reproduced the sound vibrations in the form of traces on the coated cylinder as it revolved. Scott drew attention to the fact that similar sounds produced similar traces.



**The B.B.C. Symphony Orchestra, conducted by Sir Adrian Boult, recording in the E.M.I. Studios. The illustrations to this article are reproduced by courtesy of E.M.I. Ltd.**

Twenty years passed before anyone seriously considered the possibility of converting the traces back into sound. Edison was the first to accomplish this. He had substituted a rigid point for Scott's bristle and covered the cylinder with tin foil instead of lamp black. When the needle was passed over the indentations made in the foil, the sounds originally made were reproduced. It is said that the first words ever to be recorded were "*Mary had a little lamb.*"

Edison's apparatus was called the "Phonograph," and the machines with their cylindrical records attained considerable popularity. The next outstanding advance was made by Emile Berliner who, in 1880, after experimenting with recording on glass discs, evolved a method of duplication from metal moulds on to discs made from a shellac compound.

Modern recording technique dates from 1925, when electrical recording revolutionised the industry. The various companies began to build their own soundproof studios, where acoustic troubles could be reduced to a minimum and outside noises excluded. In the old days many a recording at the Hayes studio of H.M.V. was ruined by the whistle of a passing express locomotive or the hoot of a factory siren. As a point of interest it may be said that much of the knowledge gained during the construction of recording studios was put to good use during the building of broadcasting studios.

We will imagine that the B.B.C. Symphony Orchestra, or perhaps the band of the Coldstream Guards, has arrived at one of these studios to make a recording. First come the rehearsals. Behind a glass panel in a soundproof room at the far end of the studio the recording engineer listens intently to the music, which comes to him via a microphone. He is in touch by telephone with a man seated close beside the conductor of the orchestra or band. The recording engineer is an exacting critic. "Too much bass . . . a little more trombone . . . trumpets too close . . .," and so forth. The conductor is informed, the necessary adjustments made, and the piece played through once more. If all is well, a buzzer sounds and absolute silence prevails. A red light glows—the recording engineer has lowered his cutter on to the wax disc and the first trial record is being made.

What is happening behind the glass panel? Here is an array of complicated-looking apparatus and dials innumerable. The recording machines, which look like big gramophone motors, are marvels of engineering science, yet strangely enough, that highly-polished wax disc on which will be engraved the "sound pattern" of

the music, is rotated in what seems primitive fashion—by means of a large weight and pulleys! Even in these days the pull of gravitation is the surest way of achieving unvarying speed. It is essential that the wax disc shall revolve at an absolutely constant speed throughout the whole recording.

When the recording engineer is satisfied with the rehearsals, he lowers the cutting stylus carefully on to the wax disc and then switches on the red light. The music begins, and with a quiet hiss the stylus begins cutting the sound grooves in the wax, the thin shavings it skims off being automatically removed by suction. Faithfully engraving every sound vibration which comes from the microphone, the stylus cuts its way ever closer to the centre of the disc.

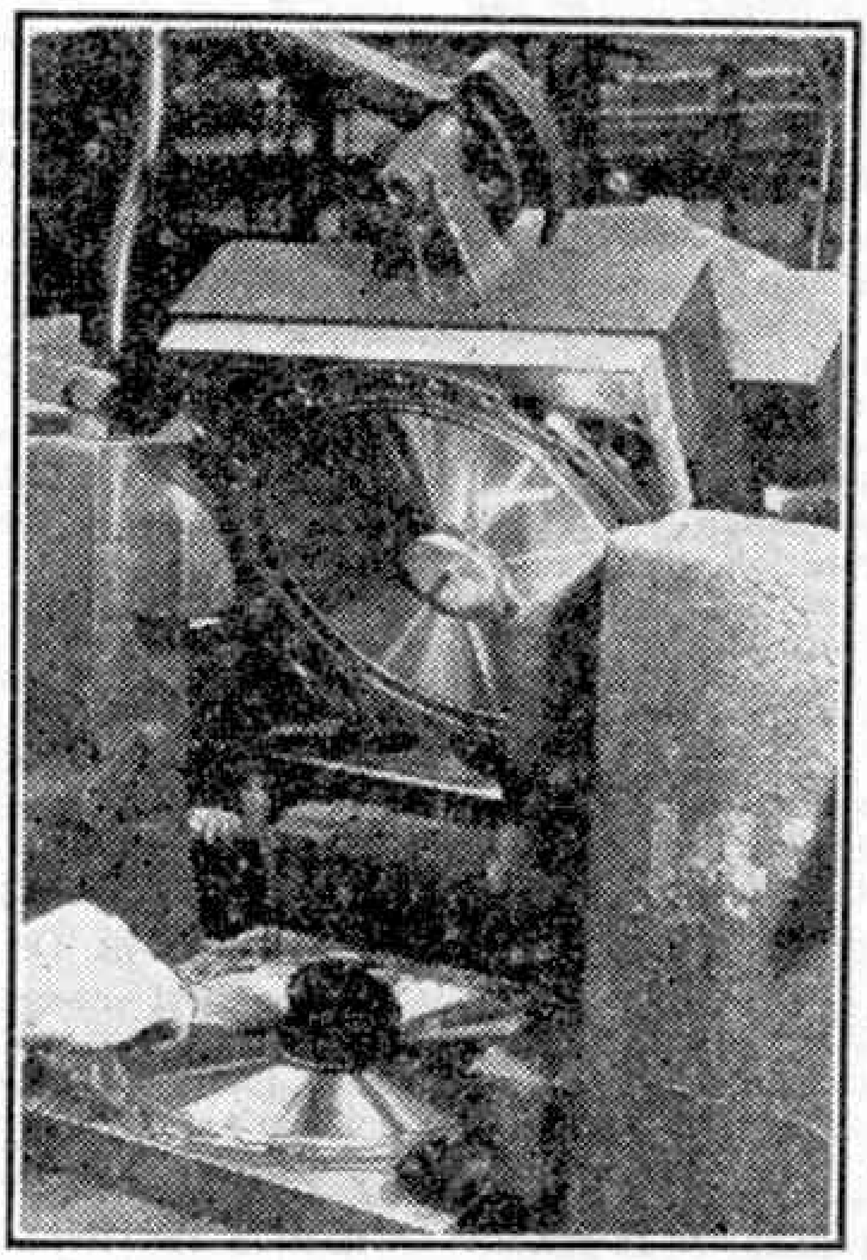
**Engraving the "run in" grove, necessary to operate auto-brakes on turntable mechanisms, on a recorded wax disc.**

Recordings are often taken in duplicate, so that one of the wax discs can be "played back" for the conductor and performers to criticise. The wax disc so used is, of course, ruined in the process, but if the performance is to everyone's satisfaction the second disc will be used for succeeding processes.

The recording engineer first carefully examines the surface of this disc through a magnifying glass, and if all is well he numbers the wax on the plain centre portion, packs it in a special container, and despatches it to the factory for copies to be made.

On arrival at the factory, the engraved wax is prepared for electrotyping by dusting the surface with metallic powder so fine that it does not affect the sound traces. This metallised surface attracts the particles of copper in the plating bath, and a thin but strong "negative" shell of this metal is deposited on the wax.

This first copper shell is called in the trade the "Master." As it is a "negative" the sound waves appear as ridges instead of grooves. It could be used to press records straight away, but in a short time it would begin to wear and to renew it the whole process of recording would have to be done all over again. So, to obviate this, a second copper shell called the "Mother" is now grown on to the master. This, of course, is a positive and therefore of no use for pressing records, so the mother goes back into the plating bath and a third and final shell is deposited on it. This third shell is called the working matrix and is the one actually used for making the records we buy. These matrices can be taken from the mother as often as necessary.



**A gramophone record in the making. When the press is closed the rolled up "biscuit" is moulded into shape by the matrix faces above and below, and is cut to the correct size.**

The master is then carefully filed in a fireproof vault, along with many thousands of others representing the best of recorded art for the past 40 years or so. It is of interest to record that working matrices of a number of famous speeches and musical performances have been deposited in hermetically sealed cases at the British Museum for the information of future generations.

The working matrix is now backed with a steel plate and sample records are pressed from

(*Continued on page 473*)

# BOOKS TO READ

*Here we review books of interest and of use to readers of the "M.M." With certain exceptions, which will be indicated, these should be ordered through a bookseller.*

### "NELSON THE SAILOR"

By Capt. Russell Grenfell, R.N.
(Faber. 8/6 net)

We can never learn enough about England's greatest sailor, whose victories saved Britain during the Napoleonic wars. As a seaman and a warrior Nelson was supreme. In the years that have passed since his wonderful achievements he has become an almost legendary figure of romance. There has been good ground for this, as his triumphs were fabulous in their extent, and he died at the moment of his greatest and most decisive victory. Yet the air of glamour that has spread over his life is liable to be misleading, and for that reason this story of his career will be welcomed, as the author has shown the great sailor exactly as he was. To record his weaknesses and failures does not in any way detract from his fame, and indeed the life story of Britain's naval hero actually gains in fascination and interest.

The most valuable feature of Capt. Grenfell's book is the wonderfully clear manner in which he demonstrates Nelson's genius for warfare. For instance, there is an admirably lucid account of his action at the battle of St. Vincent, when he broke the line of battle ordained by the British commander, an action that ensured a rousing victory. The story of the battle of the Nile is told with remarkable clarity, illustrating to the full Nelson's leadership and his power of inspiring the captains and crews who fought under him. Copenhagen and Trafalgar, and Nelson's dominating part in these battles, are dealt with no less admirably, and readers will have no difficulty in appreciating the moves that led up to these great conflicts as well as the battles themselves. The four great battles of course were the highlights of Nelson's career, but they were connected by a thread of achievement in many different fields of action, and from Capt. Grenfell's narrative we realise to the full the genius of this great sailor, fighter and leader.

The book contains five full page plates and four diagrams.

### "MODERN LOCOMOTIVES"

By Brian Reed (Temple Press. 8/6)

"*Modern Locomotives*" is one of the first of a new series of illustrated books known as the boys' "Power and Speed Library." The author writes with a thorough knowledge of his subject, explaining exactly in simple language the various considerations affecting the steam locomotive, with reference to design and building, running and so on. Although the steam engine gets the lion's share of attention, other forms of traction are not neglected.

The book forms a most useful introduction to the subject for any boy who is setting out to study the locomotive seriously. It is fully illustrated with half-tones and line illustrations, but it is surprising to find among the pictures two Western Region locomotives numbered in the "60000" series allocated on nationalisation to former L.N.E.R. stock.

### "CONQUEST OF THE NORTH ATLANTIC"

The Cunard White Star Company have had the happy idea of telling the story of the North Atlantic service of the past century in this booklet. The story begins with the coming of steam and the beginning of steamships, and shows how the first Cunarder, the "*Britannia*," was succeeded by ever larger and faster ships, including such famous vessels as the "*Campania*," the "*Lusitania*" and the "*Mauritania*," up to the coming of the giant "Queens," the largest and most luxurious ships of the present Cunard White Star fleet. Interesting details are given of famous Cunarders, and there are many excellent pictures.

### "COMPANY OF ADVENTURERS"

By Louise Hall Tharp (Harrap. 8/6 net)

The adventurers of this absorbing story are the men who founded the Hudson's Bay Company and the early trappers and traders in the unexplored wilderness of the Canadian forests. When the Company was formed there were only a few settlements along the Atlantic Coast and on the St. Lawrence, and these were French. One famous Frenchman, Pierre Radisson, had his quarters in Three Rivers, between Quebec and Montreal, and travelled widely in the backwoods, often among hostile Red Indians. He was badly treated by his native France and as a result turned to the service of the English King, playing a great part in the foundation of the Hudson's Bay Company

Radisson's further adventures are well told in this book, and we have also the stories of many famous successors who helped to make the Company prosperous and famous, among them Henry Kelsey, Samuel Hearne, the first Arctic explorer, Alexander Mackenzie, who discovered the great Canadian river named after him, George Simpson and Donald Smith. One of the most interesting sections of the book tells the story of the settling of Manitoba by Scottish emigrants under Lord Selkirk, who for years endured great hardship, but led the way in transforming Canada's prairies into a wheat granary. The final sections bring us to the time when the Company surrendered its fur empire, which was transferred to Canada, and took on its present form.

The story is a wonderful one and is well told by an author who knows the remoter parts of Canada intimately. It contains many illustrations in line.

### "MODERN BRITISH AEROPLANES"

By Charles Gardner
(Temple Press Ltd. Price 8/6)

Mr. Gardner, who for many years has been the Air Correspondent of the B.B.C., has concentrated in this book—designed for boys of 9 to 90!—on explaining the intricacies of the modern aeroplane in a chatty, amusing and easily understood way. The book is in two parts. The first part begins with a chapter explaining how an aeroplane flies, and one on how the piston engine works that leads naturally to another on the working of a jet engine. Then there is a most interesting chapter on modern navigation. Part two deals in detail with many of Britain's outstanding aircraft, and covers most of the problems associated with modern high-speed aeroplanes.

Throughout the work scientific explanations are simplified by the use of everyday comparisons, and the whole is not only fun to read but also teaches a lot in a light-hearted way. It is splendidly illustrated, with two plates in colour, 34 half-tone photographs and many explanatory diagrams. The book will make an ideal Christmas gift for any boy keen on aeroplanes.

### "THE RISKY QUEST"

By Noel D. Harrower (Harrap. 5/- net)

The first interesting thing to be noted about this story is that its author wrote it before he had reached the age of 14 years. The next is that in spite of the writer's youth it is a vigorous yarn of exploration and warfare on a previously unknown island, claimed by both British and French. After conflict with natives the two nations agree to divide the island, but before they can take effective possession a Spanish pirate steps in and seizes it. How he is overcome is splendidly told. The story never flags in interest from start to finish. There is a map of the island and excellent illustrations.

## "AIRLINERS"

By JOHN STROUD
(Penguin Books Ltd. Price 1/6)

There has long been a need in the excellent "Puffin Picture Book" series for a book on aircraft. This one, just published, is devoted entirely to air liners, and within its 30 pages contains details and illustrations of nearly 40 past and present types of passenger-carrying civil aircraft. These range from the Vickers Viking Commercial and other types of converted bombers, with which many European civil air routes began after the 1914–18 war, to the British Airspeed "Ambassador" and American Boeing "Stratocruiser" of to-day. The centre pages deal with the Lockheed "Constellation" and include an excellent cutaway illustration of one of Qantas Empire Airways' machines of this type. The book ends with notes on the Bristol "Brabazon" landplane and Saunders-Roe "Princess" flying boat of the future.

The text briefly summarises the main features of the machines and the principal routes on which the aircraft now in service are employed. The neat and attractive drawings, mostly in colour, are also by the author, whose skill in this direction is well known to "*M.M.*" readers interested in aeroplanes.

## "TRAINS ANNUAL 1950"

(Ian Allan Ltd. 7/6)

The 1950 edition of this popular Annual is larger than those of previous years and contains an attractive selection of articles by a talented team of writers. The fact that the Editor is Mr. Cecil J. Allen, M.Inst.T., is a sufficient guarantee of the interest and accuracy of its contents. For the first time coloured plates are included, and there is a wealth of half-tone photographic reproductions, while a modern note is struck by the coloured jacket and cover, both of which show a London Midland express train hauled by a blue-painted Class 7 4–6–2.

We begin with a racy account of the "Stranraer Road" of the former G. and S.W.R., and further pre-grouping interest is lent by an attractive description of the South Eastern and Chatham line. Locomotive subjects get a good share of attention at the hands of various writers, a particularly interesting chapter being that on locomotive testing, with special reference to the Rugby Testing Plant. Railways in Ireland and in the Alps provide almost amusing diversity, while railway ticket collecting and the adventures of the cover artist in the course of several commissions are distinctly entertaining. The book ends with a very thorough account of the career of the train now again known as the "*Mid-day Scot*," for long years the 2 p.m. from Euston and distinguished by Euston men even yet by the nickname "*The Corridor*."

## MODEL BUILDING BOOKLETS

We have received a series of constructional booklets issued by the well-known firm of Percival Marshall and Co. Ltd. These are well up to the standard set by this firm. They are written by experts in their own spheres, and amply illustrated with carefully drawn diagrams to guide the home constructor.

Mr. E. F. Carter writes on "*Locomotive Body Construction*" (3/–), with his usual care and attention to the detail that means so much in the success of model making of this kind. "*Models in Wood*" (7/6), by Mr. C. Baker, gives ideas for building miniatures and household novelties, many of them of a kind not usually dealt with in wood-working handbooks. An always attractive topic is dealt with in "*Period Ship Modelling*" (3/6), by R. K. Battson, who explains how to construct an Elizabethan galleon that is remarkably complete and realistic; and in "*Painting and Lining Models*" (3/–) R. C. Rogers shows how to give the finishing touches to models of all kinds, a valuable addition to the Percival Marshall series. Lastly we have "*Ships in Bottles*" (3/6), by J. P. Lauder and R. H. Biggs, who explain the mystery of coaxing fully rigged sailing ships into bottles with surprisingly small necks.

## "THE MODERN WORLD BOOK OF RAILWAYS"

By PAUL TOWNEND
(Sampson Low, Marston & Co. Ltd. 8/6)

This is a good general book on the ever-interesting subject of railways, and is particularly suitable for younger readers. In its 17 chapters it manages to refer very fully to most aspects of railway equipment and working. The beginnings of railways and their development, the work that the railways do and the men who run them, occupy several of the earlier chapters; travel possibilities by rail, narrow-gauge systems and the building of "the road," with boat trains and London's Underground, form a further interesting section; and big station working, freight trains and the war effort of our railways also are given special attention.

Overseas railways have a chapter all to themselves. The design and working of the steam locomotive cover two chapters in different parts of the book, and the whole is fittingly concluded by a brief account of the elaborate maintenance organisation necessary to keep railways in working order.

The book is simply written, without a mass of confusing technicalities, and the illustrations, some in colour, are extremely comprehensive.

## MATHEMATICS AND THE IMAGINATION

By E. KASNER and J. NEWMAN
(Bell. 15/– net)

There is much more in mathematics than the sums that we plough through laboriously at school, and unfortunately few of us ever realise the wonders of huge numbers, geometries that were never imagined by Euclid, famous puzzles that have tantalised great mathematicians and the almost mystifying laws of chance and probabilities. Here is a book that will entice the reader into the realm of higher mathematics and will show him that this is alive with interest. Even such a symbol as pi, a mere nuisance to the average schoolboy, turns out to have a romantic history of its own, while many strange things happen when we begin to twist and distort the sheets of paper on which we draw geometrical figures. The book indeed will open up a new world to older readers of the "*M.M.*" who have mathematical inclinations, and the parts that at first seem fantastic and even impossible will stimulate them to further thinking.

## "THE AUSTRALIAN TRAMWAY ALBUM"

(Traction Publications, Australia. 6/–)

This interesting book contains a brief history of every Australian tramway system, with many photographs of tramcars and other tramway vehicles ranging from horse-drawn and steam passenger cars to rail grinders and water cars. Even a ferry boat for carrying tramcars over a harbour is featured.

Australian systems have a very large variety of tramcars of their own design as well as American and English types, including double deckers, which are rare outside our own country. Tramways remain the principal form of street transport there, and in 1945–6 tramcars carried more than half the total number of city and suburban travellers of that period. The various systems are well described, and the book will prove interesting to all who have tramway interests at heart.

Copies can be obtained from Traction Publications, 29, Seymour Grove, Brighton Beach, Victoria, Australia, price 6/– each post free. The number of copies available is limited, so those wishing to possess one should apply early.

## "DIAMOND COAST"

By A. D. DIVINE
(Children's Books Ltd. 5/–)

Here is a dramatic story of a fight with ruthless diamond raiders of the South African Coast. The heroes are captured by the raiders, but succeed in freeing themselves, in finding the hiding place of the diamonds and in ensuring the rout of the raiders. A lively and interesting story, with seven full page illustrations.

# Among the Model-Builders

By "Spanner"

A Meccano prizewinner from Australia. Our photograph shows G. Burns, Warragul, Victoria, who won Second Prize in a recent "M.M." Competition.

### An Automatic Reversing Mechanism

Several model-builders have enquired for help in designing automatic reversing mechanisms as they seem to find such mechanisms rather difficult. Actually there are a great many different ways of arranging an automatic reverse and the particular method adopted will depend on the purpose to which the mechanism is to be applied. The most general requirement, however, seems to be a mechanism for reversing a lift cage at each end of its travel, and I am taking this opportunity of describing a suitable mechanism for this purpose. It is shown in Fig. 1 and I hope it will prove helpful to my correspondents and others who are interested in lift and hoist building.

By making the distance between the two blocks of a pulley system automatically variable, it is possible to cause the free end of the cord to be alternately extended and returned. This movement is utilised to operate an automatic lift cage and crane hook, or any other similar movement. In the example on this page it is shown in its simplest form, but can be elaborated at will.

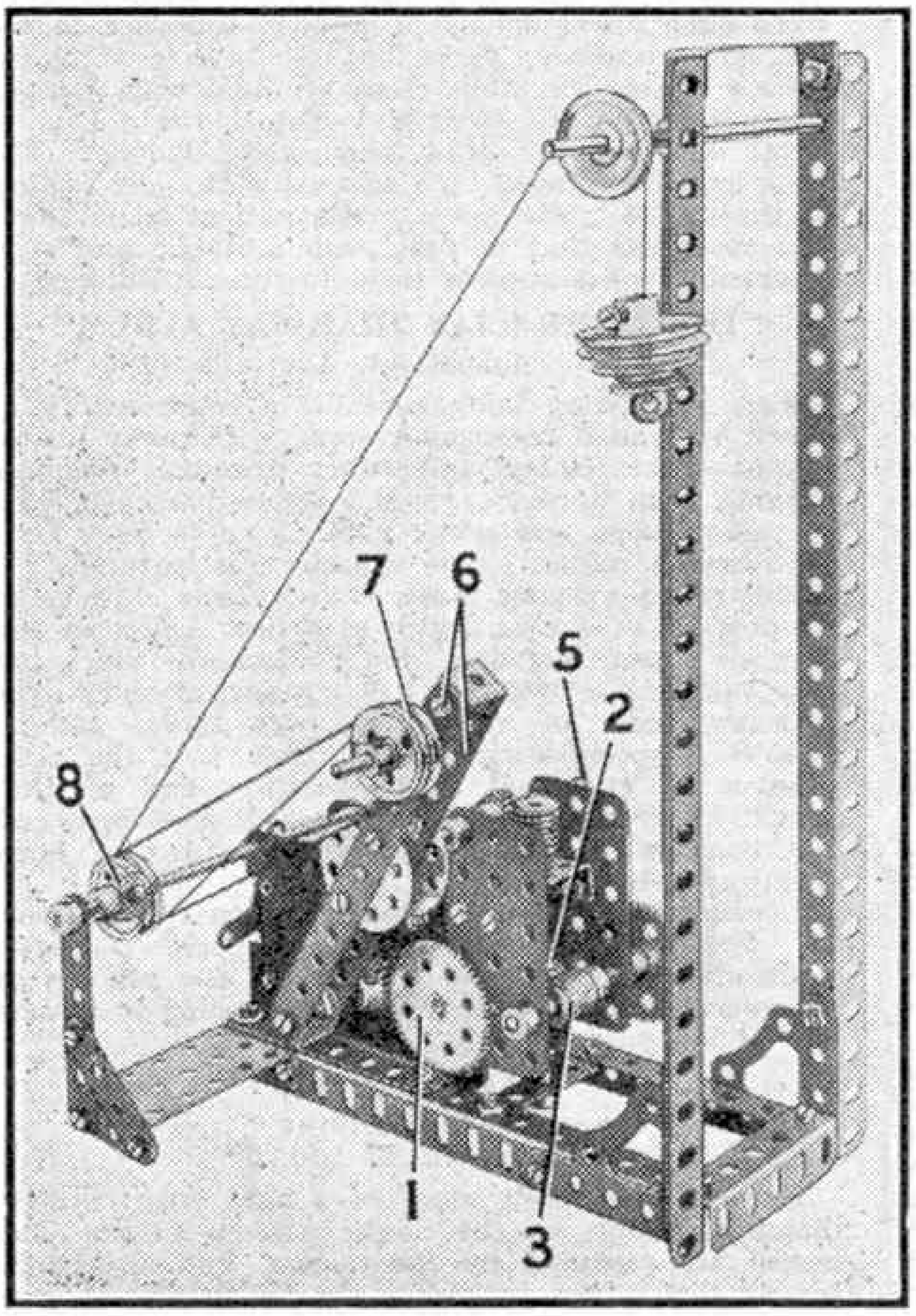



Fig. 1. An ingenious automatic reversing mechanism. It has many interesting uses in model-building.

The Electric Motor is fixed on a suitable base, and the armature shaft carries a ½" Pinion engaging with a 57-tooth Gear 1, connected by a second stage of 3:1 reduction gearing to a Worm 3 that is in mesh with a ½" Pinion 2. This Pinion is mounted on a vertical Rod, together with a second Worm engaging with still another ½" Pinion.

The Rod 5 on which this last-mentioned Pinion is mounted carries two Bush Wheels on its outer section, and these are attached to two 5½" Strips 6 as shown. One pair of Pulleys 7 is attached to the arm 6, and the other pair to a horizontal Rod carried in the Motor side-plates. One end of the Cord is tied to a Fishplate 8, and after passing round the various Pulleys is taken over a Pulley at the top of the lift shaft and fixed to the lift cage. As the arm 6 rotates the Pulleys 7 mounted on it alternately approach and recede from the fixed Pulleys.

### How to Use Meccano Parts

*Dog Clutch (Part No. 144)*

The Meccano Dog Clutch consists of one male and one female section. The object of the complete unit is to enable two shafts to be engaged or disengaged with each other whenever desired. The shafts must be mounted end to end and one must be slidable in its bearings so that the clutch sections can be thrown in or out of engagement on operation of a suitable lever.

Alternatively, the Dog Clutch can be used in conjunction with a Socket Coupling, to enable a Gear Wheel or Pinion, etc., to be mounted on a shaft

so that it can either be carried round bodily with the shaft or allowed to remain stationary while the shaft carrying it turns in its boss.

Fig. 2 shows the Dog Clutch used in the construction of a reversing mechanism. In this mechanism either of the horizontal Rods can be used as a driving shaft. Each carries at its inner end a segment of a Dog Clutch 1 and 2, and one ¾" Pinion 3 and 4. The left-hand horizontal Rod is slidable in its bearings and is controlled by a suitable hand lever.

In the first position of the hand lever the ¾" Pinion 3 is caused to engage with a 1½" Contrate Wheel, as in the illustration, while in its second position the Pinion is thrown out of engagement and the clutch members are combined. The Pinion 4 remains in constant engagement with the Contrate, and in the second position of the lever the Contrate merely revolves idly.

### Crane Jib Construction

The jib of a model crane must be made as light as possible consistent with strength. A strong and rigid jib can be constructed from Angle Girders, assembled to form a square section girder by means of Strips, additional Strips being added for diagonal bracing. A jib of lighter construction can be made from Braced Girders, and although not so rigid as the former type, it will be found sufficiently robust for most models. The Braced Girders are made to form a large box girder by bolting them together with Angle Brackets.

## A NEW MECCANO COMPETITION

### "Yuletide" Contest

The Christmas season, with all the fun and excitement it brings, will provide model-builders with countless subjects depicting humorous aspects of the festivities. There is great scope for ingenious model-building in this direction, and with this in mind we are organising a special "Yuletide" Competition for amusing models having a definite connection with the Christmas festival.

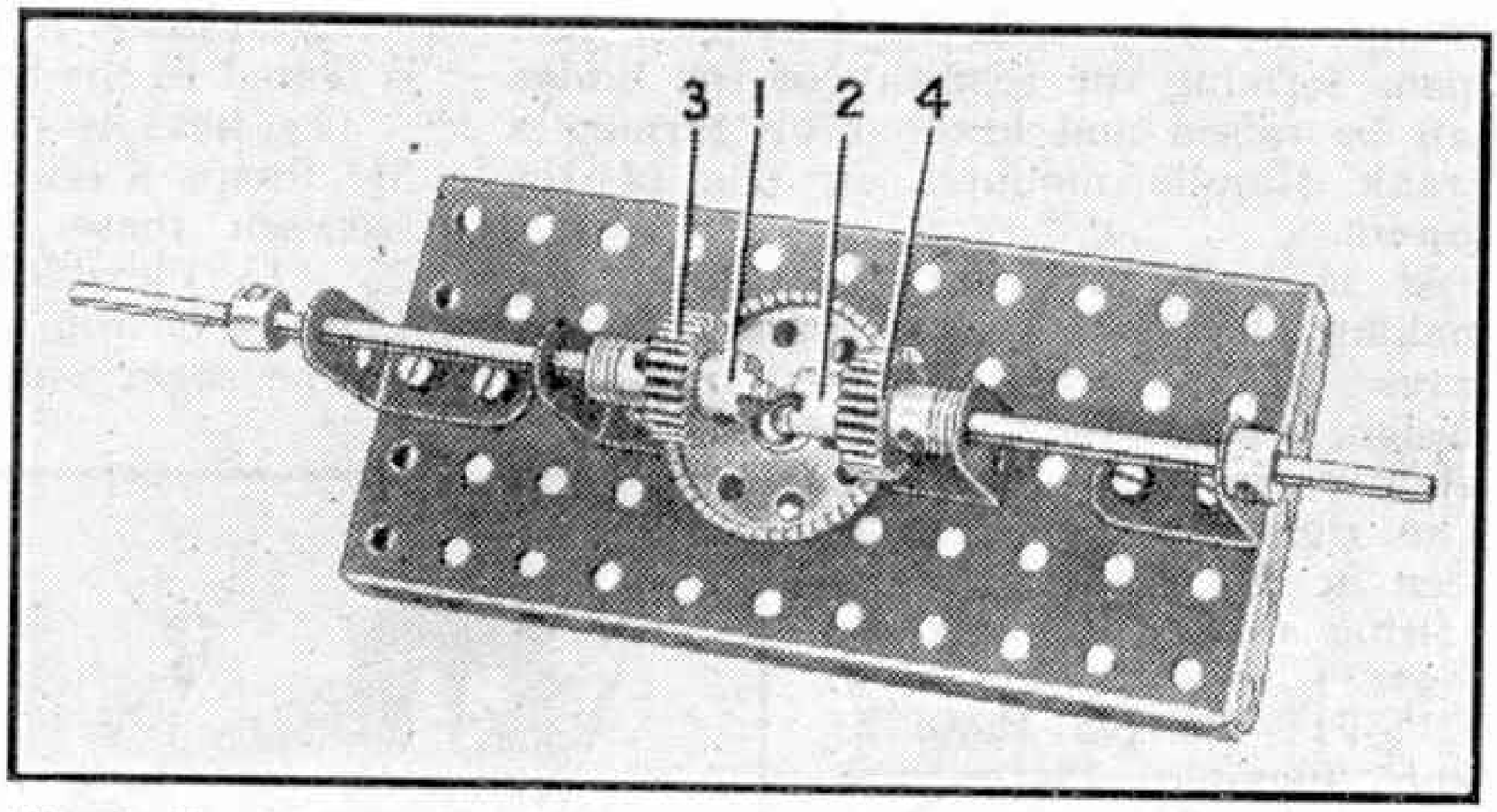



**Fig. 2. The Meccano Dog Clutch used in the construction of a reversing mechanism.**

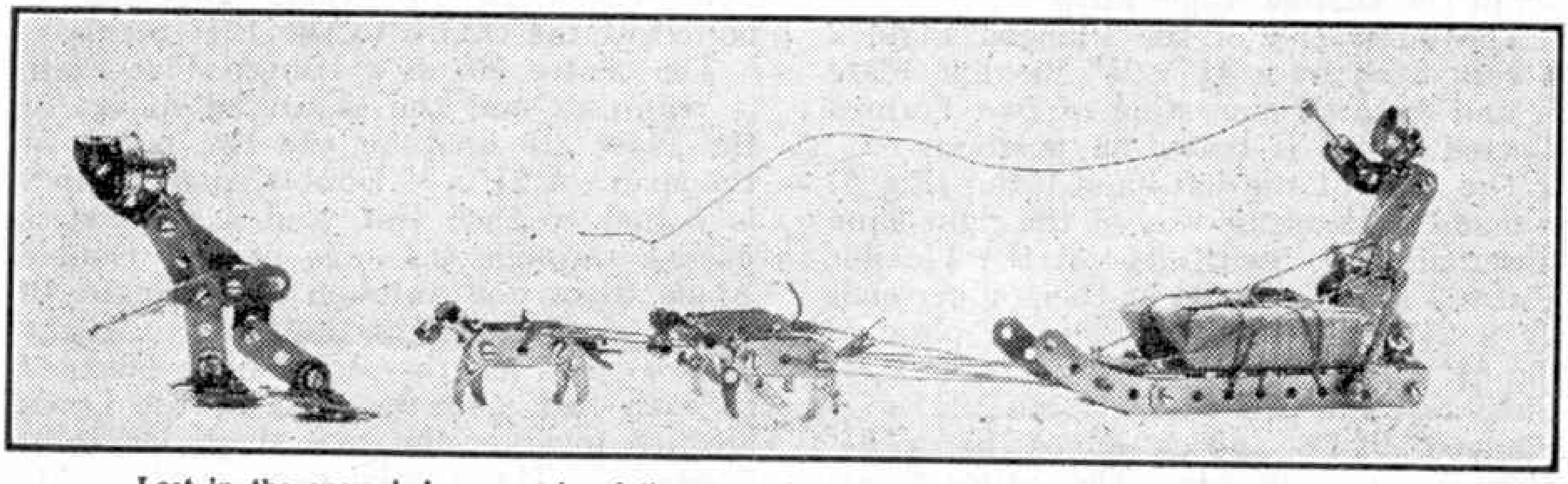
The illustration on this page is a good example of the type of model suitable for the Contest, and other subjects include carol singers, snowball fights and bringing home the Yule log! Many other subjects will readily suggest themselves. Readers should note, however, that entries need not necessarily be confined to outdoor subjects.

Competitors may use as many parts as they wish. Working models, in which the figures are brought into action by a Motor, Cord or levers, will be specially welcomed. Actual models must not be sent. A good photograph or drawing is all that is required.

The competitor's age, name and address must be written clearly on the back of each illustration submitted, and entries must be addressed, "*Yuletide Competition, Meccano Ltd., Binns Road, Liverpool 13.*"

Entries will be grouped into two Sections, for Home and Overseas readers respectively. The closing dates are Home, 31st January 1950, Overseas, 31st May 1950.

The following prizes will be awarded in each Section, First, Cheque for £3/3/–; Second, Cheque for £2/2/–; Third, Cheque for £1/1/–. There will be also five prizes each of 10/– and five prizes each of 5/–.



**Lost in the snows! An example of the type of model suitable for the Yuletide Competition.**

# New Meccano Models

## Bascule Bridge and Bagatelle Game

THE simple bascule bridge illustrated in Figs. 1 and 3 can be built with the parts included in a No. 4 Outfit. It is similar in design to the famous Tower Bridge, London, and the leaves or half spans forming the roadway of the bridge can be raised and lowered by turning a Crank Handle mounted in one of the towers.

It is best to begin construction by making the towers and approach roadways. Both towers are similar in general design, but they vary slightly in some details. The right hand tower as seen in Fig. 1 is made by bolting a $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate 1 to each side of a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate 2. The Flexible Plates are braced by $2\frac{1}{2}''$ Strips and small radius Curved Strips, and the Plates 1 on each side are linked by a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip. A $1\frac{11}{16}''$ radius Curved Plate is flattened and attached to the Double Angle Strip and to the flange of the Flanged Plate 2. The base is extended upward by two $5\frac{1}{2}''$ Strips 3 on each side, and the space between these Strips is filled in by a $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate. A $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 4 is used to link the Flexible Plates together, and a $3\frac{1}{2}''$ Rod passed through the centre hole of the Double Angle Strip carries two Road Wheels, a Wheel Disc and a 1" Pulley. The Rod is held in place by a 1" Pulley fixed underneath the Double Angle Strip.

The outer end of the Flanged Plate 2 is supported by a $4\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate 5, and an arch consisting of two Formed Slotted Strips is bolted in position.

The base of the left-hand tower (Fig. 1) is made in the same way as the right-hand tower already described, but the Flexible Plates 1 are connected at their upper ends by a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flanged Plate in place of the $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate 2. A $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate 6 is bolted to the $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flanged Plate, and is edged by a $3\frac{1}{2}''$ Strip 7 on each side. The Strips 7 are connected to the Flexible Plate 6 by Angle Brackets, and the outer end of the Plate 6 is supported by a $4\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate also attached by an Angle Bracket. An arch made from Formed Slotted Strips is bolted to the Strips 7.

The base is extended upward by two $5\frac{1}{2}''$ Strips 8 on each side, and the space between these Strips is filled in by a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate and a Semi-Circular Plate. The top of the tower is completed in the same way as its companion.

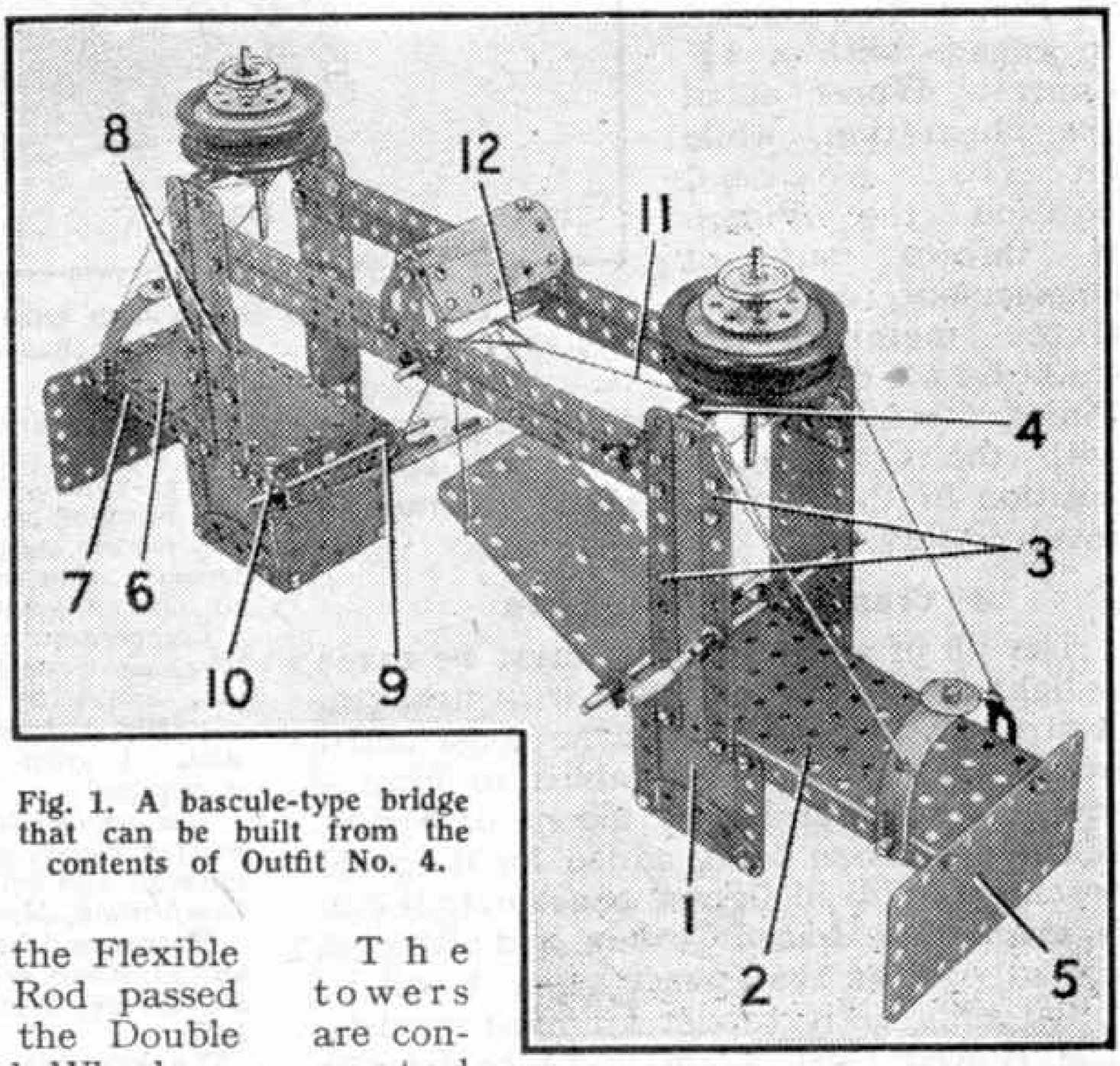



**Fig. 1. A bascule-type bridge that can be built from the contents of Outfit No. 4.**

The towers are connected together by two $12\frac{1}{2}''$ Strips on each side, and a U-section Curved Plate attached to Flat Trunnions by Angle Brackets is bolted at the centre to the $12\frac{1}{2}''$ Strips.

The centre pin of a Hinged Flat Plate is removed, and the separated halves of the Plate are used for the two leaves of the span. A $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 9 is bolted to each leaf, and a 4" Rod is passed through the lugs of the Double Angle Strip and through a Fishplate 10 bolted at each side of the base.

Two short lengths of Cord are fastened to each leaf, and the ends of the Cords are tied together and to a single length of Cord 11. The Cords pass over a $3\frac{1}{2}''$

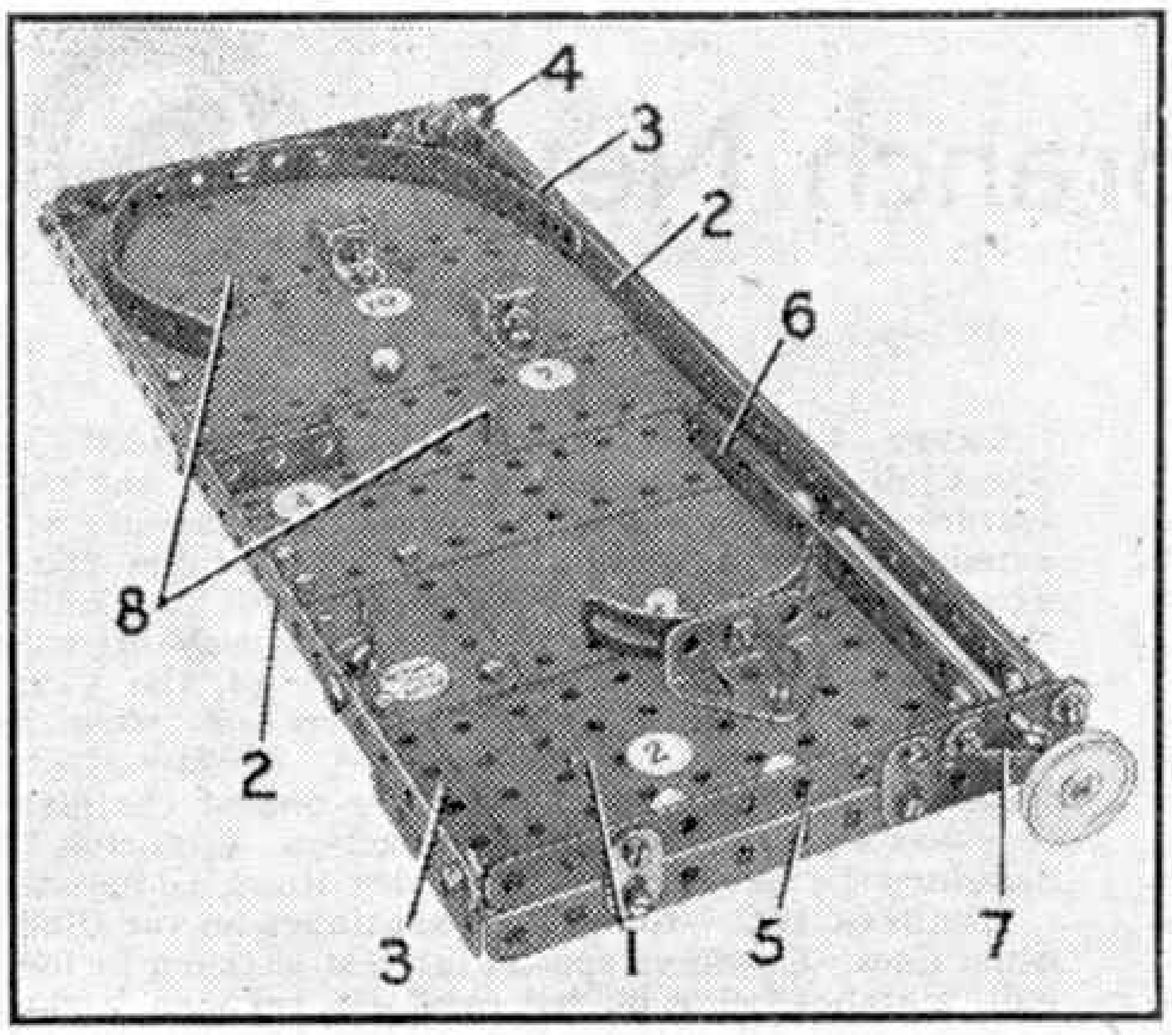



**Fig. 2. A Meccano bagatelle game that will provide fun for the Christmas party.**

Rod 12 mounted at the centre of the bridge, and Cord 11 is fastened to a Cord Anchoring Spring on a Crank Handle. The Crank Handle is mounted in the right-hand tower as shown.

Parts required to build the model Bascule Bridge: 4 of No. 1; 8 of No. 2; 2 of No. 3; 9 of No. 5; 4 of No. 10; 5 of No. 12; 2 of No. 15b; 4 of No. 16; 1 of No. 192; 4 of No. 22; 2 of No. 24a; 8 of No. 35; 80 of No. 37; 4 of No. 38; 2 of No. 38d; 1 of No. 40; 6 of No. 48a; 1 of No. 51; 1 of No. 52; 4 of No. 90a; 4 of No. 187; 2 of No. 188; 2 of No. 189; 4 of No. 190; 2 of No. 191; 1 of No. 192; 1 of No. 198; 1 of No. 199; 2 of No. 200; 2 of No. 214; 4 of No. 215.

An amusing bagatelle game forms the subject of our other new model this month and is shown in Fig. 2. It can be assembled with the contents of a No. 4 Outfit, but three or four ball bearings or small marbles are required for use with it. The model is simple to construct, and will provide plenty of amusement, especially to the younger members of the family. The balls are "fired" up the board by means of a spring-operated plunger, and with a little practice a surprising degree of accuracy can be obtained in directing them into the various numbered pockets.

The base of the model is made by bolting two $12\frac{1}{2}''$ Strips at their lower ends to a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate 1, and at their upper ends to a $5\frac{1}{2}''$ Strip. The $12\frac{1}{2}''$ Strips are indicated at 3, and the space between them is filled in by Flexible Plates. Two $5\frac{1}{2}'' \times 2\frac{1}{2}''$, two $5\frac{1}{2}'' \times 1\frac{1}{2}''$ and a compound $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plates are used for the purpose. The compound plate is made from a $4\frac{1}{2}'' \times 2\frac{1}{2}''$ and a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate bolted together.

The sides of the table are $12\frac{1}{2}''$ Strips 2 and they are attached to the Strips 3 by Angle Brackets. A $5\frac{1}{2}''$ Strip 4 is attached to one end of the table by Angle Brackets, and at the other end a $5\frac{1}{2}''$ Strip 5 is bolted to Fishplates. A further $5\frac{1}{2}''$ Strip 6 is attached to an Angle Bracket bolted to Strip 5, so that a channel wide enough to accommodate the balls easily is made between Strip 6 and the side of the table.

The plunger consists of a 4" Rod fitted with a 1" Pulley, and it is mounted in Strip 5 and in a Reversed Angle Bracket bolted to the Strip. The spring loading on the plunger is obtained by a Driving Band 7, which is bolted to the Strip 5 and is passed over two Bolts screwed into the boss of the 1" Pulley.

Two $5\frac{1}{2}''$ Strips are curved to the shape shown in Fig. 2 and they are attached to the Strip 4. The table is tilted slightly to allow the balls to roll freely to its lower end by bolting two Flat Trunnions to the Strip 4.

Five numbered pockets, arranged as shown in the illustration, are fitted to the table, and two $\frac{3}{8}''$ Bolts 8 are fixed to the Flexible Plates by two nuts on each bolt, so that any balls coming into contact with them as they roll down the table are deflected.

Parts required to build the Bagatelle Game: 5 of No. 2; 4 of No. 4; 4 of No. 10; 2 of No. 11; 8 of No. 12; 2 of No. 12c; 1 of No. 15b; 1 of No. 22; 44 of No. 37; 2 of No. 37a; 1 of No 48; 1 of No. 52; 2 of No. 125; 1 of No. 126; 2 of No. 126a; 1 of No. 188; 2 of No. 189; 1 of No. 191; 2 of No. 192; 1 of No. 215.

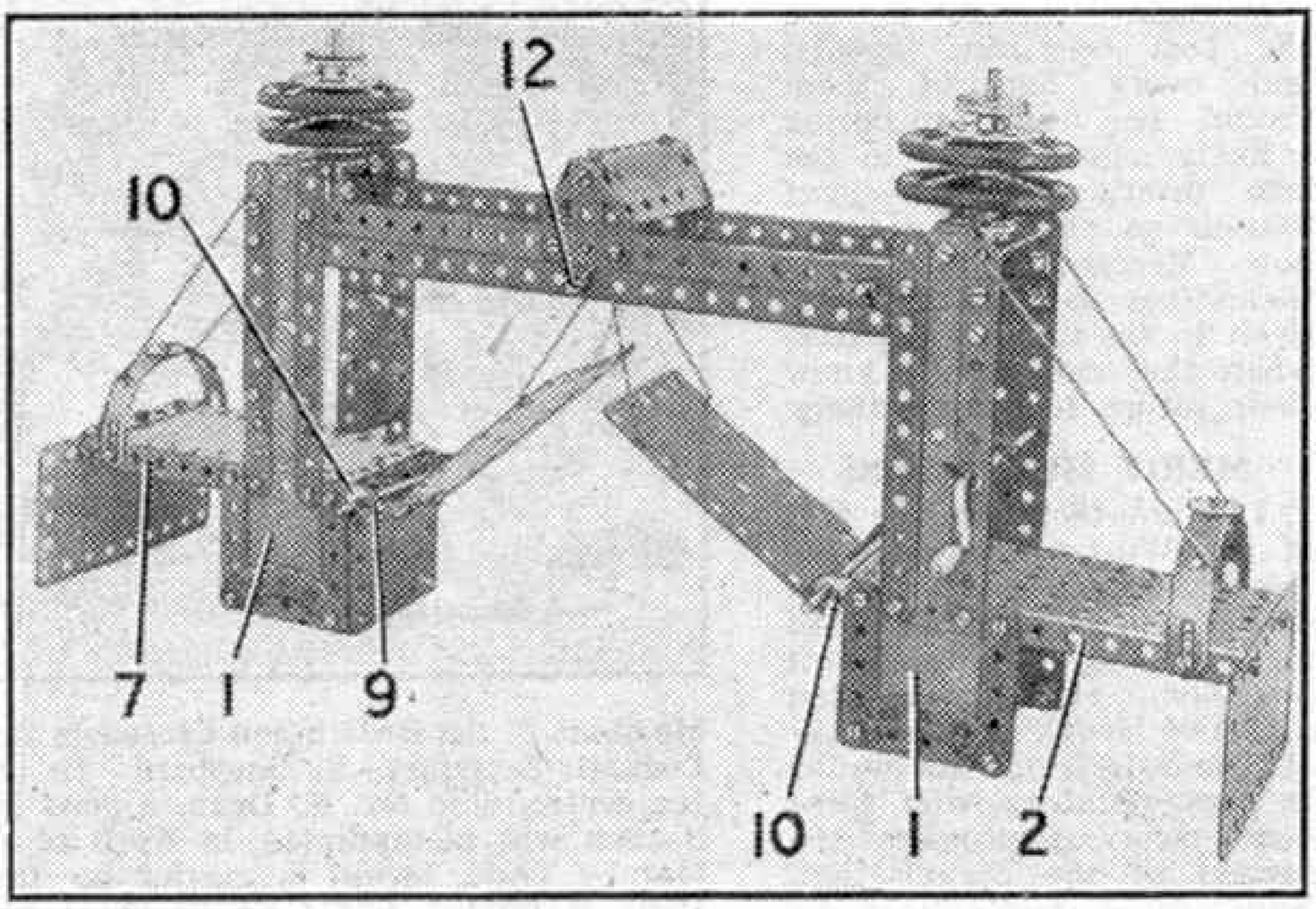



**Fig. 3. Another view of the bascule bridge.**

# Club and Branch News

## WITH THE SECRETARY

### A MERRY CHRISTMAS

Once more I send my warmest Christmas greetings to members of the Guild and the H.R.C. in all parts of the world. From my correspondence I know that this happy season will be fitly commemorated in Clubs and Branches. Special Exhibitions are being held, and parties also have been arranged, to celebrate the completion of a period of good Club and Branch work. These events will have the further effect of increasing team spirit among members, and if there are any Clubs or Branches that have not yet fixed a date for one of these happy gatherings I urge them to do so at once.

A Social Evening does not require so much preparation as an Exhibition. The Club or Branch room should be decorated in some way to provide bright surroundings, and games and some form of entertainment should be arranged. It is good fun when members themselves provide entertainment, but if any of them has a friend who is capable of simple conjuring tricks or some other form of amusement he should try to get him to come along and help them all to enjoy themselves. Refreshments of course are necessary. There is no special difficulty about this important part of the proceedings, which need not be elaborate. In most organisations parents of members willingly take part in the preparations, and in any Club or Branch, however small, their help should ensure a really merry Christmas party.

### NEW MEMBERS FOR MORE FUN

Another point that calls for special attention at this time of the year is the introduction of new blood. Many boys receive Meccano Outfits or Train Sets as Christmas presents, and those who are already enthusiasts often find their resources increased. This means that more boys are looking for ways of making the most of their hobbies, and all connected with Clubs and Branch should seize the opportunity of introducing them to the pleasures of Club and Branch life.

Members themselves are the best recruiting agents, and every one of them should be urged to bring a likely new member to the first meeting of the next Session so that he can see how Meccano boys enjoy themselves. Better still, invite them to the Christmas party, where they can learn to know their future fellow members.

### MERIT MEDALLIONS

This month brings the first of the Winter Sessions to a close, and Leaders should now decide whom to recommend for the award of the Merit Medallion. In each affiliated Club two Medallions are available and the recipients should be the members who have done most to promote the success of the organisation. Nominations should reach me by the end of the month.

## CLUB NOTES

CRYPT GRAMMAR SCHOOL (GLOUCESTER) M.C.—The Club held a very successful Exhibition, the chief feature of which was a Hornby Train Layout, with extensive lineside details, on which suitable Dinky Toys were prominent. All locomotives and rolling stock were thoroughly tested to ensure successful running. The Exhibition was part of the Crypt Parents' Association Fete, and proceeds were for the funds of the Association. A Hornby Dublo Layout displayed and operated by one of the members was a particularly great attraction. Club roll: 23. *Secretary:* D. Gettings, 17, Riversley Road, Gloucester.

HORNSEA M.C.—Good work continues on the Club's usual lines. Outdoors special interest is taken in football, matches being played regularly between various sections and all members receiving opportunities of joining in the fun. Club roll: 27. *Secretary:* R. Lancaster, Carlton House, Carlton Avenue, Hornsea.

WHITCHURCH (GLAM.) M.C.—Regular meetings for Model-building and other hobbies have been held. Other events have included operations on a Hornby Gauge 0 Railway, Outdoor Games and a Visit to a Power Station at Treforest. One Ramble resulted in the addition of fish and water plants to the aquarium of one of the members. Club roll: 9. *Secretary:* F. G. Butler, 6, Mervyn Road, Whitchurch.

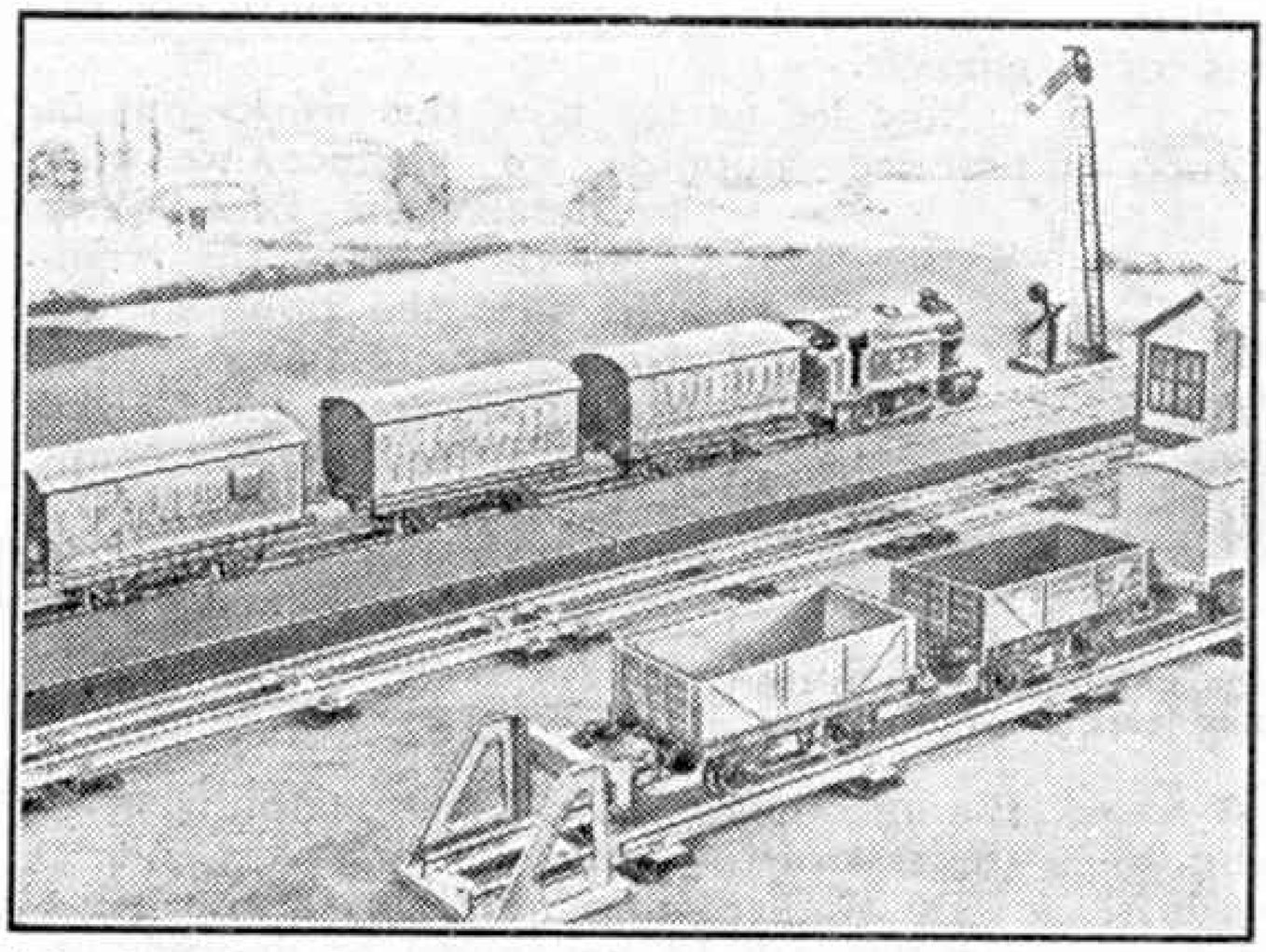
## BRANCH NEWS

SHIRLEY AND DISTRICT—Most meetings have been devoted to Hornby Train operations. On two Track Nights members ran trains on the garden railway of Mr. H. C. Lavis, Chairman, taking turns in the operation of signals and points. Other events have included a Railway Quiz and Games. *Secretary:* D. J. Hancock, 26, Wickham Avenue, Shirley, Croydon, Surrey.

**Members of the Beddington Crusaders Branch, No. 515, Chairman, Mr. A. A. H. Lockett, Secretary, B. Sheppard. In our photograph Mr. Lockett is seen in the centre, with Mr. K. Dean, a good friend of the Branch, on his right. This Branch was incorporated in April of this year. The extensive track of its Hornby Train layout is carried on trestle tables connected by bridges, and there is intense traffic on its three parallel lines, while a large goods yard forming part of the system is the scene of realistic operations.**

# Beginning the Hornby Railway Hobby

MANY boys will be receiving their first Hornby trains this Christmas and will want to know how to get the greatest enjoyment and the best results from their railways.



**A local passenger train made up of the components of the Hornby No. 101 Train Set leaving a wayside platform.**

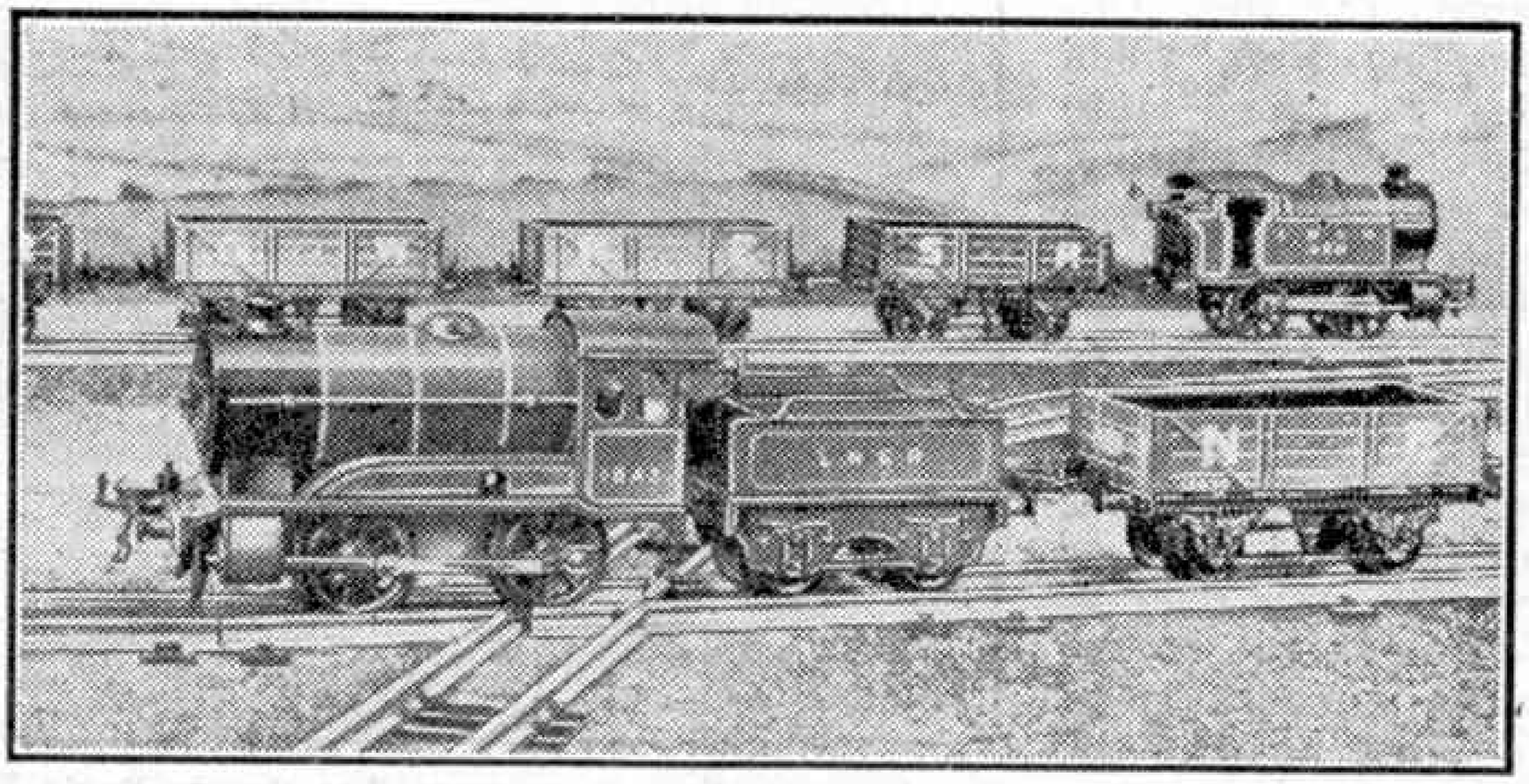
Each Hornby Train Set contains an oval track. Having assembled this, making sure that it is laid on a perfectly level surface and properly connected, the next step is to oil the Locomotive and Coaches or Wagons according to the instructions packed in each Set. This oiling should be repeated from time to time. It is a good idea also to lubricate, very sparingly, the coupling pivots, so that they may move easily from side to side. Oil should always be applied with a wire dipper or a sharpened match stick rather than an oil-can, in order to prevent over-oiling.

The engine should then be carefully wound, slowly at first, while we count the number of turns of the key required to wind the mechanism fully. After this first experiment, we should make it a rule to give one or two turns less than the maximum, in order to avoid the risk of overwinding.

All Hornby Train Sets contain a Brake Rail, and the Hornby No. 501 and No. 601 Sets are provided with a Brake and Reverse Rail. These Rails have movable trip pieces that can be made to engage with the braking or reversing mechanism of the engine according to its type. Only the Locomotives of the No. 501 and No. 601 Sets can be reversed from the track at present, but all types can be braked.

The Brake Rail has a single trip placed between the rails, while the Brake and Reverse Rail has two. In each case they are worked by a handle at the track side. The correct method of working these is to push the operating handle inward to its fullest extent, at the same time turning it much as one does with a door key. It is a good idea to apply a drop of oil to the handles where they pass through the rail, to ensure easy operation.

It is fascinating to see the engine brake or reverse itself without being touched by hand. When an engine is being reversed from the track the operator should of course draw the rail handle outward to put the trip out of action after the engine has passed it; otherwise the engine will be reversed a second time on passing back over the trip piece. The operator must act quickly but surely; so practice in using the brake and reverse trips will be found helpful in securing successful working.

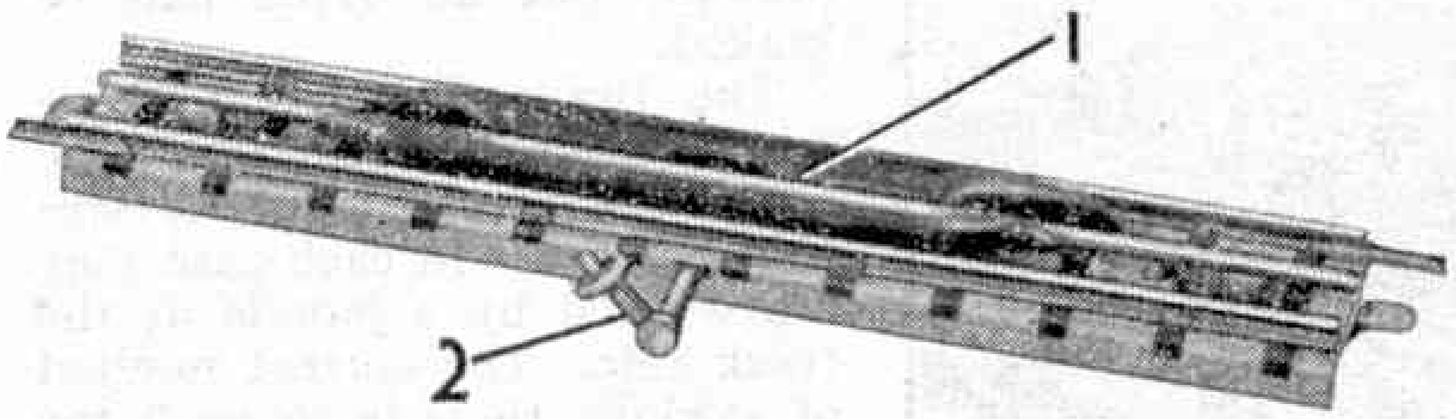


**Two goods trains passing on a Hornby clockwork system. The engine in the foreground is a No. 501 type Locomotive.**

# The Hornby-Dublo Uncoupling Rail

ONE of the most important post-war developments in the Hornby-Dublo System has been the introduction of new and greatly improved automatic couplings. In pre-war days Hornby-Dublo Trains had automatic couplings that would engage when the vehicles were pushed together, but there was no automatic means of uncoupling them.

The new couplings engage instantly when the vehicles fitted with them are pushed together and it is fascinating to watch them do this. If for any reason it is necessary to remove a wagon from a train, this can be done by lifting it straight up off the track, without disturbing any of the other vehicles in the train.



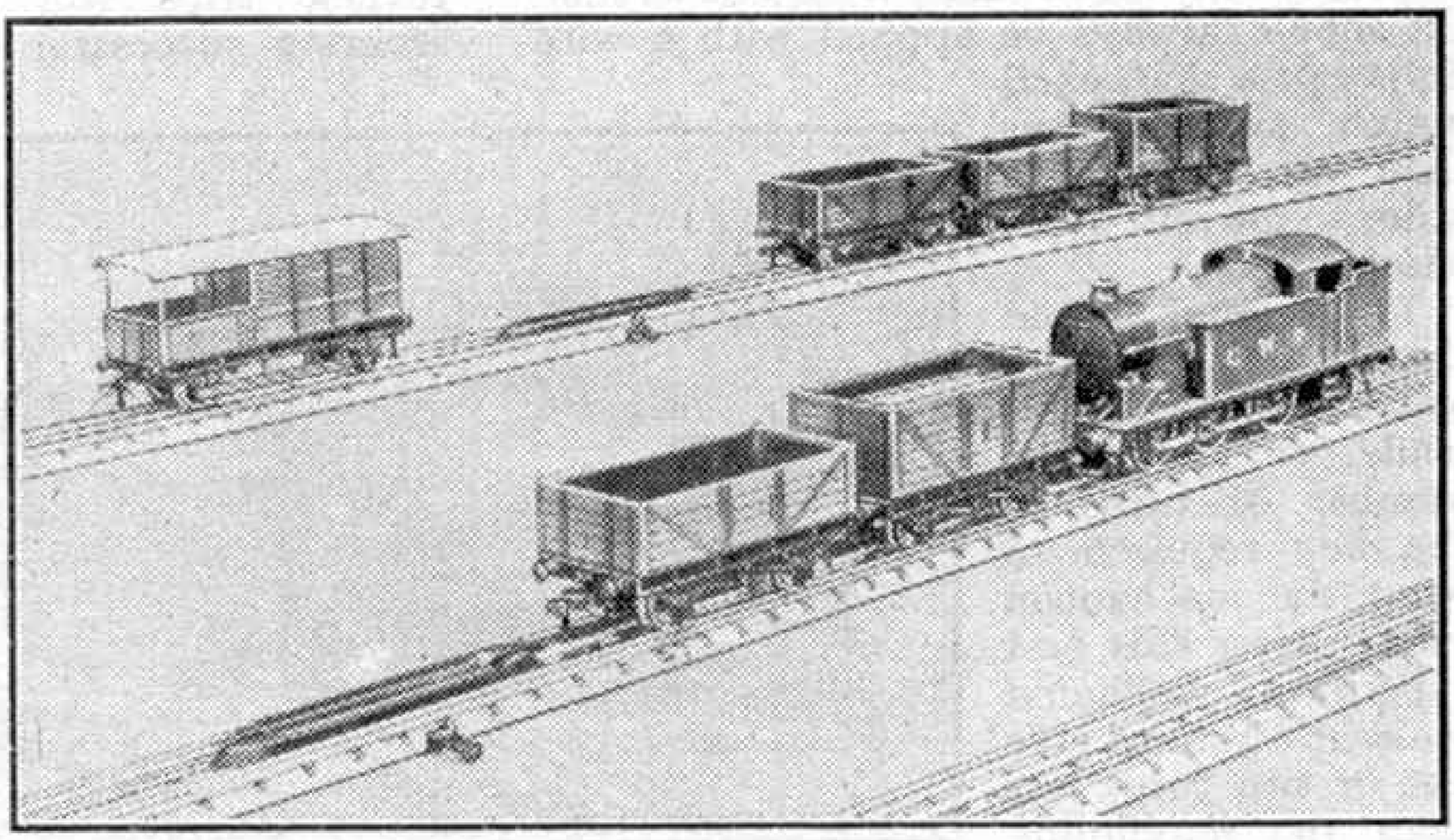

**The Hornby-Dublo Uncoupling Rail showing the movable ramp 1, in the raised position, and the operating lever, 2.**

The special advantage of the new couplings, however, is that they are designed to work in conjunction with the Hornby-Dublo Uncoupling Rail illustrated above. Purchasers of post-war Hornby-Dublo sets may have been puzzled by the downward projecting "tail" that is characteristic of the new couplings fitted to their trains. The purpose of this tail is to engage with the ramp of the Uncoupling Rail, when this is raised into the operating position by means of the hand lever at the side of the Rail. When the ramp is lowered to its normal position it is clear of the couplings, and so has no effect on them as vehicles pass over it.

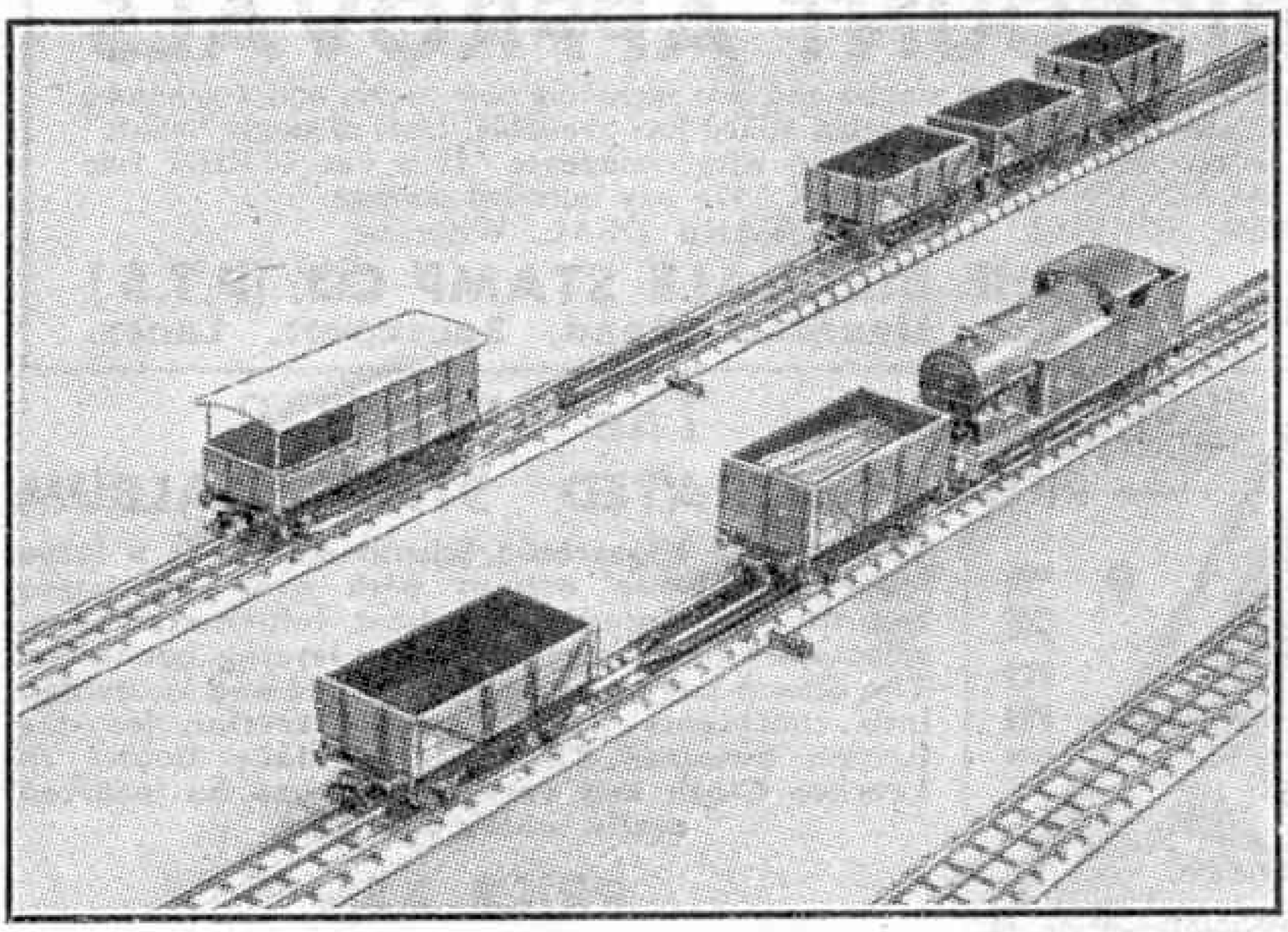
The action of the ramp when raised is to press against the tails of the couplings of vehicles that are passing over it, and so to part the couplings sideways. It continues to hold them apart all the time the vehicles are actually moving over it, and therefore during this period the vehicles are uncoupled. When the vehicles pass beyond the ramp the couplings automatically re-engage.

Now let us see how this works out in practice. Suppose, for instance, we wish to detach the Brake Van from the rear of the train. We raise the ramp of the Uncoupling Rail and then back the train on to the Rail. As soon as the couplings between the Brake Van and the next vehicle come on to the ramp they are automatically uncoupled. The locomotive is then quickly stopped, and the uncoupled Brake Van runs on clear of the rest of the train.

By similar train movements any other vehicles can be uncoupled as desired; we stop the engine quickly as soon as the couplings between the vehicles concerned are over the ramp. With a short train, even the beginner will find that, with a little practice, he can carry out a clean uncoupling each time. More practice is required to deal with a long train, but it is quite possible to uncouple separately any vehicle or groups of vehicles that can be accommodated in any siding or on a straight stretch of track. The interest



**Shunting operations in progress. The Hornby-Dublo Tank Locomotive is pushing the last two wagons of a train towards the Uncoupling Rail.**



**The engine stops smartly and the wagon that is detached runs on from the Uncoupling Rail. The other wagon remains attached to the engine.**

of movements in a long siding can be increased still further by the use of two Uncoupling Rails, with not less than two Straight Rails between them.

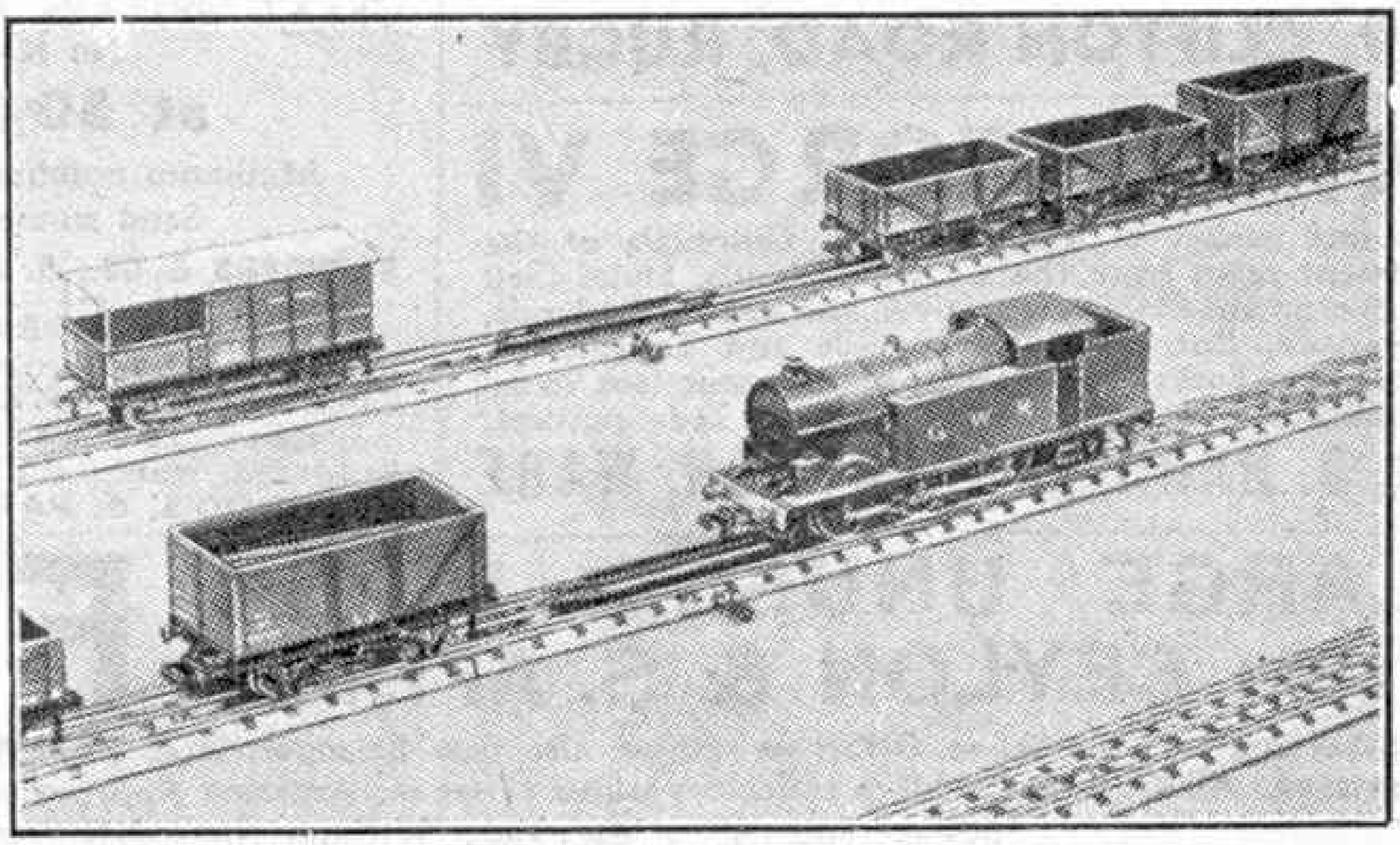
Where a great deal of shunting is done, each siding in a goods or marshalling yard may have an Uncoupling Rail. Then a train can be quickly broken up into sections or even individual vehicles, according to the operating programme. The exact position of the Uncoupling Rail in any siding will depend on the layout and the way in which the siding is arranged. In general, it is better if the Rail is approached by a short length of straight track, and it is certainly advisable to have the Rail followed by straight track. A point that should not be overlooked is that the hand lever operating the Uncoupling Rail should be on the side of the track nearest to the operator.

Care should be taken to prevent the rolling stock couplings from becoming bent out of shape. They should move freely on their pivots. The tails should be vertical, and the horizontal part of the couplings of all vehicles should be on the same level.

A slight smear of oil on the coupling faces and the lower end of the tails makes for sweet working. This is in addition to the normal lubrication of the axle bearings to ensure free running. The introduction of the Uncoupling Rail is a great step forward in the development of the Hornby-Dublo system. It makes possible for the first time a great variety of shunting operations similar to those in everyday use in real railways, and thereby adds very greatly to the interest and realism of model railway working.

Although shunting is generally associated most particularly with the working of goods trains, it plays an important part also in the running of passenger trains. Such operations as the running of engines round their trains by means of loop lines, or the shunting of empty coaches at the end of a run, become readily possible by means of Uncoupling Rails placed at strategic points.

Next month we hope to describe some useful shunting schemes based on the use of the Uncoupling Rail, for both passenger and goods operation. From these descriptions Hornby-Dublo owners will be able to work out schemes for their own use, suitable for the track and train material at their disposal. We shall be glad to help readers who find any difficulty in doing this, so that they will be able to make the best use of the new rail.



**The final shunt; the last wagon is left in the siding but clear of the other wagon shunted off previously.**

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We send a large and varied selection of picked modern singles and sets including new issues, and a generous discount allowed off purchases. Br. Colonial or B.C. and Foreign Mixed lots available. Lists of single "wants" welcomed, and such stamps will be included if possible. Send with confidence. It is our STRICT rule NEVER TO SEND AGAIN UNLESS YOU ASK. We pay outward postage.
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**— PKT.**

**FREE!** These grand **2-COLOUR TRIANGLES and 10 other desirable stamps.** Just send 2½d. postage and ask to see Special **"Mercury"** Approvals.
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## ILLUSTRATED STAMP ALBUM

**The Meteor Illustrated Stamp Album is a large loose-leaf Stamp Album with over 200 pages beautifully printed with short informative descriptions of the various stamp-issuing countries. The album covers the whole world and is divided into continents with a special section for the British Empire. The cover is fully bound in Leather Cloth and extra leaves can be inserted easily where required.**

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This miniature stamp collection is **FREE** to all collectors. Amongst the many unusual emissions is the illustrated new issue commemorating the Pacific scout festival in Australia, and should be in every collection. There are issues from Abyssinia (Nurse and child), Mint large Cameroons (animal and Herdsman), Italian P.D., Philippine Isles (scene of historic fighting), beautiful pictorial Madagascar, sets and overprinted issues. As demand will be great your immediate application is advisable. Just send 3d. postage and request our world-famous approvals, and illustrated **FREE** price list.

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# KING GEORGE VI

A fine packet of unused British Colonials of the present reign from the Cayman Islands, Malta (Self Government Commemorative), the Leeward Islands, Grenada, Burma, Kenya, Uganda and Tanganyika, and the Turks and Caicos Islands sent free to all applicants for Approvals enclosing 2½d. postage.

**R. D. HARRISON, ROYDON, WARE**

# HALF PRICE APPROVALS

We are offering until further notice special books of GREAT BRITAIN and BRITISH COLONIALS
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Minimum purchase, 10/- worth for 5/- net.
Send stamp for trial selection.

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**COMMEMORATIVE PACKET FREE!**

Many attractive British Colonial and other recent COMMEMORATIVES have just arrived and are yours. HURRY FOR THIS—IT'S FREE!
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# LARGE UNUSED U.P.U. from CEYLON & S. AFRICA FREE!

**Packet** contains the above attractive stamps, also new **Selangor:** large **BAHAMAS Tercentenary** (unused) and **Pakistan.** All **Free (NO** catch!) to collectors asking to see my Amazing Approvals. 3d. must be sent to cover **my** postage and lists of **Bargains.** (Without Approvals Price 1/-).

**G. L. WRIGHT, (Dept. M.1), Palace Street, Canterbury, Kent**


*For other Stamp Advertisements see also pages 492 and xv.*

# Stamp Collecting

## Railways in the Stamp World

By H. H. Baetjer

IF you are a philatelist—in plain English, a stamp collector—and you have in your collection a 2c. carmine and black stamp featuring the world-famous locomotive No. 999 hauling the "*Empire State Express*" of the New York Central, you have one of the most intriguing stamps in any railway enthusiast's collection. But if the train is pictured upside down, you have something you can swap for an all-expense tour around the world! There are not many of these inverted "999" stamps in circulation, but the few that do exist are members of the Royal Family of Stampdom. One of them has been known to bring as high as $2,500—almost £900 at the current rate of exchange—at a stamp auction.

There is a tremendous fascination in collecting railway stamps. And there are lots of them, too. According to one authority, 78 different countries have issued well over 800 railway stamps to date, and these portray hundreds of different subjects. You will find beautiful reproductions of such things as locomotives, trains, railway bridges, track works, signal bridges, tunnels and train ferries, and even the wartime bombardment of a Danish railway junction.

New Brunswick holds the distinction of being the first country in the world to produce a railway stamp. Her 1c. stamp issued in 1860 admirably features a typical "puffer" of that period.

The second railway stamp to appear was issued by the United States Government. It was printed in 1869 and depicts a 4-4-0 type locomotive, with "balloon stack," which was so distinctive that it came to be known as the "American" type.

Twenty-five years passed before another United States railway stamp was to appear. In 1901 the "*Empire State Express*" stamp was issued to commemorate the Pan-American Exposition being held in Buffalo. The inverted train, already referred to, was produced as the result of the centre plate's being inserted upside down during the printing. Another curious feature of this stamp is that when the centre plate was reassembled, it was locked so loosely during printing that the train then appeared in a great number of varying positions. Collectors immediately spotted this oddity, and a few now take particular delight in arranging these stamps on pages so that the express train is shown in progressive stages of its run—first emerging in the right-hand corner of the stamp and finally disappearing at the left.

During 1912 and 1913, three parcel post stamps were put out by the United States depicting a railway postal clerk operating a catcher arm picking up a mailbag, a mail train, and a manufacturing plant showing freight cars on the siding. More recent issues include the 1944 commemorative featuring a painting of the golden spike ceremony of 1869, when the first transcontinental line was completed, two composites in 1947 of early and modern mail-carrying vehicles, and the 1948 stamp picturing a train passing over the railway bridge at Niagara.

Fourteen stamps in which railway motive power and other equipment are featured or shown incidentally have been printed by the United States to date, although only one of these stamps was issued to commemorate the important role which railway transportation plays in our daily lives.

When one considers that 76 different countries have issued railway stamps, it is indeed interesting to discover that tiny Belgium, with only 3,209 miles of track, has printed more railway stamps than any other country in the world. The first of Belgium's 244 stamps honouring her railways appeared in 1897, and more than 20 different railway subjects have been featured. Among the more interesting portrayals are winged wheels on rails, a track worker adjusting baseplates, an engineer in the locomotive cab, and a railway crossing.

Since railway transport in numerous countries of the world is about 100 years old, many special issues commemorating centennials and other anniversaries have appeared in recent years. For example, Bulgaria issued four colourful stamps in 1939 to mark the 50th anniversary of her state railways. One of the more well-known stamps in this series is a dark blue one showing Tsar Boris III, in military uniform, peering out of the cab window of a modern steam locomotive.

The development of the steam locomotive was first shown on a series of stamps in 1933, when the Egyptian Government authorised the issue of four stamps to honour the delegates to the International Railway Congress then meeting in Cairo. Although lithographed in rather sombre colours, the contrast between the "teakettle" of 1852 and the big "jack" of 1932 is indeed striking.

Strange as it may seem, the iron horse has been given recognition in a number of air mail issues. Approximately 33 railway stamps fall within this category, and without doubt the most delightfully humorous stamp in this group is the Costa Rica air mail issue of 1947. This blue-green and black engraving was issued to commemorate the 50th anniversary of the Ferrocarril del Pacifico—an *electric* railway—and it features a steam locomotive!

## FREE ROUMANIA FOOTBALL PACKET

YOU ARE IN LUCK!! We will send ABSOLUTELY FREE to YOU for YOUR collection, a wonderful packet of stamps, which includes this illustrated interesting Sports Stamp, issued by **ROUMANIA,** depicting a Soccer Football match. You will also find contained in this magnificent Free Packet obsolete **BURMA** (King and animals); **SWITZERLAND** (Lake Lugano); **TRAVANCORE** (famous Conch Shell); pictorial **AFRICAN** and unusual International Occupation issue for the **SAAR** territory. All these marvellous stamps YOURS for the asking; just request **Free Roumania Football Packet** and send us 3d. in stamps for our posting costs—in return we will send not only this Absolutely Free Packet but also some of our famous Windsor Approvals which everyone likes so much. As an extra gift we will also send free one of our illustrated pages of lovely stamps.

**WINDSOR STAMP CO. (Dept. M), UCKFIELD, SUSSEX**

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**(Dept. MM)**

**"Leewards," Glastonbury Chase, Westcliff, Essex**

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Introducing to new customers our approval service which caters especially for the beginner and medium collector We offer:

1. Booklet containing a nice range of Br. Colonials, countries from Australia to Eire.
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3. A useful lot of stamps priced at one penny each, Colonials and Foreign.
4. Details of the substantial discounts we allow, and other special advantages of our approval service. *You need only send a postcard to receive the above on approval, but as our final point, we offer:*
5. A special packet of 50 large Airmails, Commems., Pictorials—all different, catalogued up to 2/6 each, with a total cat. of nearly 10/-. Normally 3/6, we offer this packet at 1/9 only—(less than ½d. per stamp)—post free with our price list to new customers joining our approval service.

**CAPT. M. CAMPBELL & CO. (Dept. M.M.)**
**58, High Street, Watford, Herts.**

## FREE! This fine packet

of Br. Colonial U.P.U's to all requesting our famous approvals and enclosing 3d. stamp.

**FRANCIS CURTIS & CO. LTD. (DEPT. M.Z.)**
**226, BAKER STREET, LONDON N.W.1**

## FREE FIVE FINE FIUME!

How many stamps have you of this Old Town on the Adriatic? None? Well here is your opportunity. Five fine large Fiume FREE with any one or more of:—10 Cuba 6d., 50 Turkey 1/3, 50 Colombia 2/6, or with approvals. Enclose postage. Dealers supplied. Oversea agents wanted. Price list FREE.

**ASTLEY & CO. (M)**
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## FREE GIFT OF STAMPS

to every applicant for approval books. The GIFT contains 30 British Colonials including 8 K.G. VI mint—no Great Britain. Good discount is given and a list of 98 Gifts is sent. These can be chosen by you and vary in value according to the money sent for purchases. They include K.G. VI; Silver Jubilees; ALL the Colonial Victory sets mint; and Foreign stamps. 3d. postage please.

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By giving Him or Her approx. 1,000 (weighed) UNSORTED mixture FOREIGN and COLONIAL stamps. Old and New issues from various sources of supply. A fine present for any collector. Abroad postage 1/- extra. **Jos. H. Gaze, 10, Pimlico Rd., CLITHEROE, Lancs.**

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In Strand Album to the First Applicant requesting my Approvals and enclosing 2/6 to cover post, etc. All others receive Bargain Packet. **H. Jackson, 20, Upper Branch St., South Bank, Middlesbrough, Yorks.**

**FREE—STAMPS CATALOGUED 5/-**
to applicants for ½d. approvals
**COX, 17, STONELEIGH PARK ROAD, EWELL**


*For other Stamp Advertisements see also pages 490 and xv.*

# Stamp Gossip

## and Notes on New Issues

By F. E. Metcalfe

A COUNTRY which continues to issue interesting commemoratives is Turkey, and the set of six, one of which we illustrate, issued during the summer in honour of the "Fifth European Wrestling Championships," is well up to the usual high standard of Messrs. Courvoisier, the Swiss firm that produced them. All the stamps show special wrestling holds, at which the Turks are masters.

In Turkey they take wrestling very seriously, and when the writer was in Istanbul earlier in the year he heard in a cafe a very heated discussion. Apparently Sweden wanted to use the services of some of the Turkish trainers, and the party discussing the matter were divided whether these experts should be allowed to explain their tricks. Everybody of course was satisfied on the point that the Turks are the greatest wrestling experts in the world. Anyhow, the stamps are interesting enough, and a full set can be obtained for about 5/-.

Another country which is very much in the philatelic limelight once more is Japan. Collectors will remember those "National Parks" issues which came out regularly before the war. While there was a sameness about them, they were nevertheless interesting and artistic productions, and the latest set of four is in the old tradition. Our illustration shows the top value, and again these stamps are within everybody's reach, for the set only costs a few coppers. A collector with an artistic bent might take up Japan with profit; stamps are being turned out by the bushel, but most are interesting and they are obtainable for very little. Above all they have the merit of being genuine efforts of the country itself.

Liberia has long been a favourite of the junior collector, for in the past its colourful stamps were unequalled. Who will forget the joys of those rare and exotic birds, reptiles and animals? Nowadays many countries vie with each other to produce exciting stamps to catch the collector, but it was different when Liberia first issued its wonders. The country is still at it, but the latest set is a very circumspect affair. The U.S.A., which is the country that more or less runs Liberia, produced a long set of stamps, featuring its past presidents; now Liberia has followed suit, and we are illustrating one of these. The set goes up to $1 at present, but it may go higher in the end. It is fairly well produced, but hardly up to the usual standard of this country's stamps.

Opinions are very divided about the designs adopted for the "U.P.U." stamps by our colonies, but they are money spinners at any rate. When the pound was devalued collectors in the U.S.A. sat up and took notice, and London stamp wholesalers received

many fine orders. One, who had hitherto grumbled that he overordered, actually had to go to the provinces to buy more stock. This was all before the stamps were ever issued. Well, we can do with all those dollars, but there is hardly a dealer or collector who wishes to see another general set issued for all the colonies, for no matter how artistic the designs may be, a couple of hundred stamps all the same, except for colour and the country's name, grow very boring before they are all even mounted.

The last stamp to be illustrated this month is worth careful study. This particular copy was one bought by the writer in Athens to use on a letter to England, and it was only on return home that the design was noticed. It is a poignant picture indeed. Early in the year Greece issued a set of three stamps to draw the attention of the world to what was happening to her children. Thousands were carried off to Albania and the stamp shows some of these children gazing at a map of their own country. Such is war of to-day; such is our modern civilisation.

The stamps themselves are only worth a copper or so, but they provide one more illustration of the uses to which stamps can be put for propaganda purposes. Stamp collectors may think that they alone are interested in stamps, but governments have learned that all people take notice of the stamps which appear on their letters, even if they do not bother to keep them. Our own government is preparing a set to commemorate the forthcoming Exhibition in London—dealers hope sincerely that corresponding stamps will not be issued by all the colonies—and without a doubt these stamps will provide more publicity for the Exhibition than anything else. Moreover, there is even a profit to be gained from such publicity. Small wonder then that stamps are pouring out from all the world's presses. Yet it can be overdone, as countries like Belgium have already found out, for beautiful as are many new Belgium stamps, collectors in Great Britain at any rate are mostly leaving them severely alone.

Readers seem to like stamp tips, so here is one about a quite humble stamp of Barbados. Gibbons list as No. 251a the 2½d. stamp of the present reign in the blue shade, and it is priced at 6d. mint. It is worth several times that modest sum, and in a year or two may bring twenty times that amount. Used the stamp is well worth twice as much, for this shade was not sold in the colony and any used copies about had to be sent out to be cancelled.

# Competitions! Open To All Readers

*Prize-winning entries in "M.M." competitions become the property of Meccano Ltd. Unsuccessful entries in photographic, drawing and similar contests will be returned if suitable stamped addressed envelopes or wrappers are enclosed with them.*

## Familiar Names in Disguise

Christmas is now almost upon us, and at this time of the year readers scan our advertisement pages more closely than ever. With this in mind, our chief contest for December is one in which the names of advertisers or advertised products appearing in this issue are used.

In the centre of the page there is a rectangle of 80 letters. These have been so arranged that the names of certain advertisers or products can be read in them. The plan is to pass from one letter to the one above it, below it or to one side. No diagonal moves are possible, but movement in any other direction, up, down or sideways, is allowed. Every letter in the rectangle must be used at least once. Most are used twice, and in some instances a letter actually appears in three different names. Initials are used in certain cases, but this is only done when they are distinctive and actually appear in the advertisements concerned.

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| B | L | A | P | E | A | A | U | N | D |
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| E | A | N | B | I | B | E | A | R | P |
| S | L | O | W | R | D | S | P | K | S |

In their solutions entrants are asked to give the names of the advertisers or products that can be read in the rectangle, together with the numbers of the pages on which the advertisements referred to appear.

As usual there will be two sections, for readers at Home and Overseas respectively. In each there will be prizes of 21/–, 15/– and 10/6 for the best entries in order of merit, and Consolation Prizes also will be awarded for other good efforts. In the event of a tie, the judges will take novelty and neatness into consideration.

Entries must be addressed *"December Advertisement Contest, Meccano Magazine, Binns Road, Liverpool 13."* Closing dates: Home Section, 31st January 1950; Overseas Section, 29th April, 1950.

## A Station Puzzle

A Quiz is always an attractive feature of a party, and here is one that will provide good fun for railway enthusiasts at social gatherings, such as those organised by Meccano Clubs and H.R.C. Branches during the Christmas season, as well as for readers of the *"M.M."* everywhere. The 12 clues given below conceal the names of well-known stations on British Railways, and tracking these down will be an interesting piece of detection. In addition to the name of each station, the town or city served by it must be stated, together with the name of the Region of British Railways whose trains make use of it.

1. We hope you will not be so unfortunate as to meet yours.
2. A rise that traditionally is Christmassy.
3. The way to Scotland?
4. A station, not a head, and not in Wales either.
5. Must be by the sea, surely.
6. Slope covered with small trees.
7. One part of it is timber.
8. A Lancashire stronghold?
9. The trains are near the water.
10. There must be money by the seaside.
11. In spite of its name is a particular station in England.
12. The name is a novel one.

As usual in these Contests there will be two sections, one for Home readers and the other for those living overseas. In each of these sections prizes of 21/–, 15/– and 10/6 will be given to the senders of the best solutions in order of merit, and in addition there will be Consolation Prizes for other good efforts. If there is a tie for any prize the judges will base their decision on the neatness and novelty of the entry itself.

Solutions must be sent to *"December Quiz Contest, Meccano Magazine, Binns Road, Liverpool 13."* Closing dates: Home Section, 31st January 1950; Overseas Section, 29th April 1950.

## December Photographic Contest

For this competition, the last of the 1949 series, we return to a special subject that will still give considerable latitude to photographers. The subject chosen is a Christmas scene. This may involve an indoor or outdoor photograph, and indeed there is no restriction in regard to the character of an entry, except that somewhere in it there must be a suggestion of Christmas.

Two conditions must be observed. The first is that each entry must have been taken by the competitor sending it, and the second that on the back of each print the entrant must write his name and state exactly what the photograph represents. There are two sections in the competition, A for readers aged 16 and over and B for those under 16, and the appropriate section letter must be given on the back of each print.

Entries must be addressed *"December Photographic Contest, Meccano Magazine, Binns Road, Liverpool 13."* There will be separate sections for overseas readers, and in each section prizes of 21/–, 15/– and 10/6 will be awarded, with consolation prizes for deserving efforts. Closing dates: Home Section, 31st December; Overseas Section, 31st March 1950.

# Competition Results and Solutions

## HOME

### JULY 1949 CAR REAR VIEW CONTEST

1st Prize: P. R. Furniss, Sheffield 8. 2nd Prize: A. Kennedy, Stockton-on-Tees. 3rd Prize: J. M. Hinton, Bristol 8. Consolation Prizes: D. K. Richardson, St. Albans; J. Drake, Maidenhead; A. Sams, Redhill.

### JULY 1949 LOCOMOTIVE SQUARE CONTEST

1st Prize: M. J. Ecclestone, Sheffield 9. 2nd Prize: W. Bradshaw, Doncaster. 3rd Prize: D. M. Ashley, Hull. Consolation Prizes: J. H. Boyes, Manchester 21; D. J. Parry, Worsley.

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| H | O | L | Y | H | E | A | D |
| H | U | L | L | C | I | T | Y |
| B | I | D | E | F | O | R | D |
| A | I | R | B | O | R | N | E |

**July 1949 Locomotive Square Solution.**

### AUGUST 1949 POINTWORD CONTEST

1st Prize: D. B. Candlin, Stockport. 2nd Prize: P. Ponsford, Welling. 3rd Prize: C. A. Williams, Plymouth. Consolation Prizes: D. D. Arthur, Glasgow S.4; C. Brent, Barking; G. J. Gilham, Sittingbourne.

### AUGUST 1949 SPORTS CONTEST

1st Prize: G. Davies, Westbury-on-Trym. 2nd Prize: G. A. Pells, Ilford. 3rd Prize: F. B. Cowell, Blackburn. Consolation Prizes: F. Pycroft, Sidcup; Miss M. Koenigsberger, Manchester 20; M. Wright, Twickenham; J. Gordon-Farleigh, London S.E.13.

### AUGUST 1949 PHOTOGRAPHIC CONTEST

1st Prize, Section A: R. Atkins, Eccles; Section B: Miss S. Carruthers, Stocksfield-on-Tyne. 2nd Prize, Section A: R. Wrigley, Clitheroe; Section B: R. Hall, Aberdovey. 3rd Prize, Section A: P. F. Chapman, St. Leonards-on-Sea; Section B: M. Egerton, Uttoxeter. Consolation Prizes, Section A: Mrs. I. Hardwick, Burnham-on-Sea; C. E. Lowe, Derby; Section B: Miss A. Mounsey, Surbiton; P. Clifford, Wembley.

### SEPTEMBER 1949 PHOTOGRAPHIC CONTEST

1st Prize, Section A: B. W. Firman, Teddington; Section B: A. E. W. Hobbs, Exeter. 2nd Prize, Section A: A. E. Moat, London N.9; Section B: D. Coates, London S.W.16. 3rd Prize, Section A: R. D. Barrett-Lennard, London S.W.1; Section B: U. J. Hackett, Aberdeen. Consolation Prizes, Section A: J. H. Boyes, Manchester 21; D. H. Tomkinson, Wells Green; S. G. Bloore, London S.W.19; S. S. Pethybridge, Newton Abbot; C. K. Benington, Ballymoney, N.I.; L. H. Hobbs, Exeter; Section B: P. J. Stone, Calstock; D. Johnson, Birmingham; P. Gill, Upminster; D. D. Davies, Carmarthen; D. M. Crossland, Nottingham.

## OVERSEAS

### MAY 1949 SLOGANS CONTEST

1st Prize: J. R. Craigie, Auckland, N.Z. 2nd Prize: L. M. Hewitt, Johannesburg, S.A. 3rd Prize: A. A Mold, Toronto, Canada. Consolation Prizes: W. G. Williams, Wellington, N.Z.; K. S. Bell, Melbourne, Australia.

### MAY 1949 LOCOMOTIVE CONTEST

1st Prize: M. Myers, Natal, S.A. 2nd Prize: E. A. Woodward, Auckland, N.Z. 3rd Prize: D. Crowley, Bombay, India. Consolation Prizes: F. Campbell, Durban, S.A.; J. E. Bate, Dunedin, N.Z.

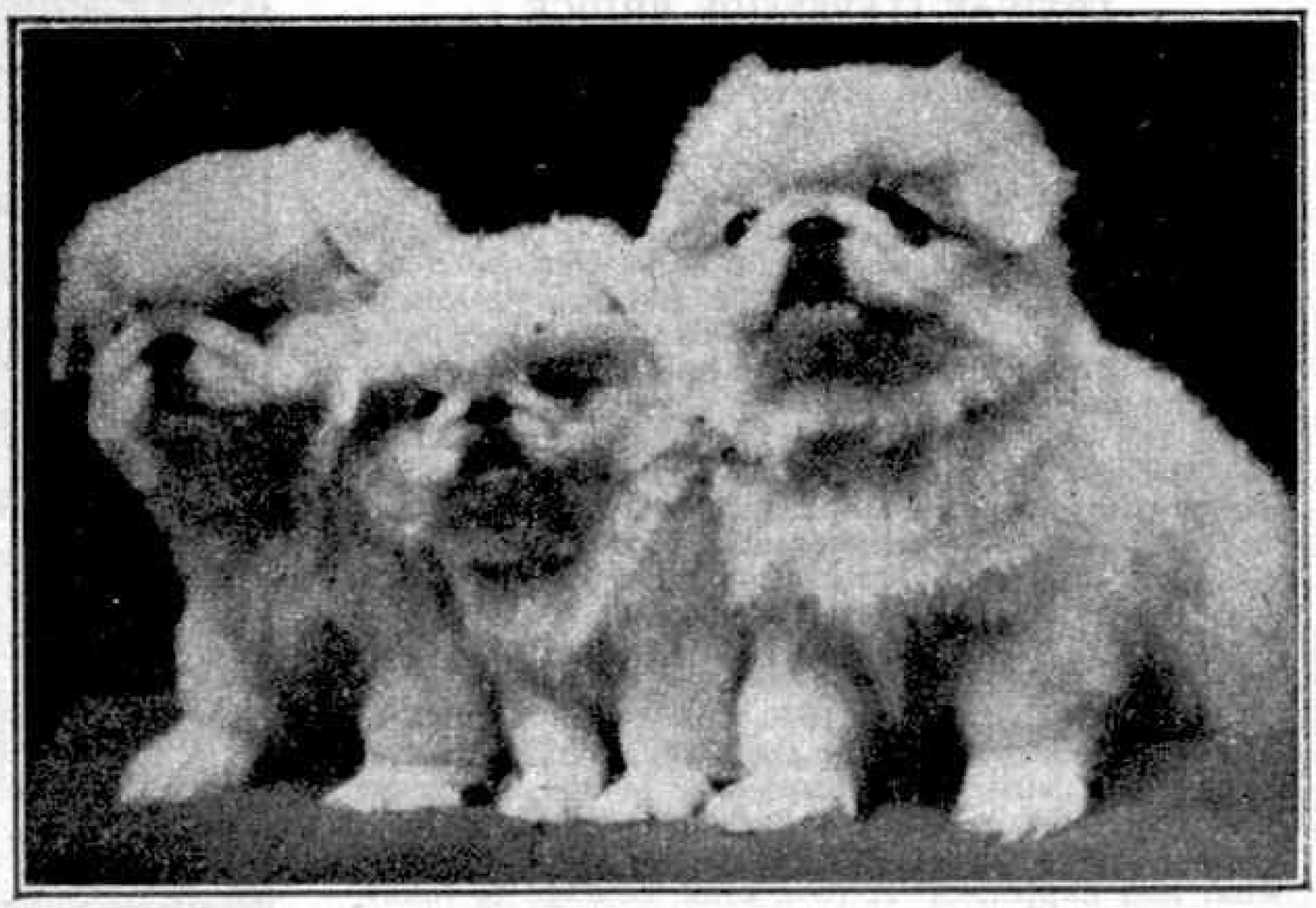
### JUNE 1949 RAILWAY STORY CONTEST

1st Prize: B. Biswas, Calcutta, India. 2nd Prize: L. G. Poole, Melbourne, Australia. 3rd Prize: 22029333 Pte. D. Bullock, Rhine Army, B.A.O.R.1. Consolation Prizes: D. J. White, Christchurch, N.1, N.Z.; J. S. Thornton, Sao Paulo, Brazil.

## SOLUTION

### JULY 1949 REAR CAR VIEW CONTEST

1. Humber Hawk. 2. Armstrong Siddeley, Lancaster Saloon. 3. Jaguar MK. V Saloon. 4. Hillman Minx. 5. Bentley Mark VI Saloon. 6. Standard Vanguard. 7. Austin A40 Devon. 8. Jowett Javelin. 9. Morris Oxford. 10. Vauxhall Velox.



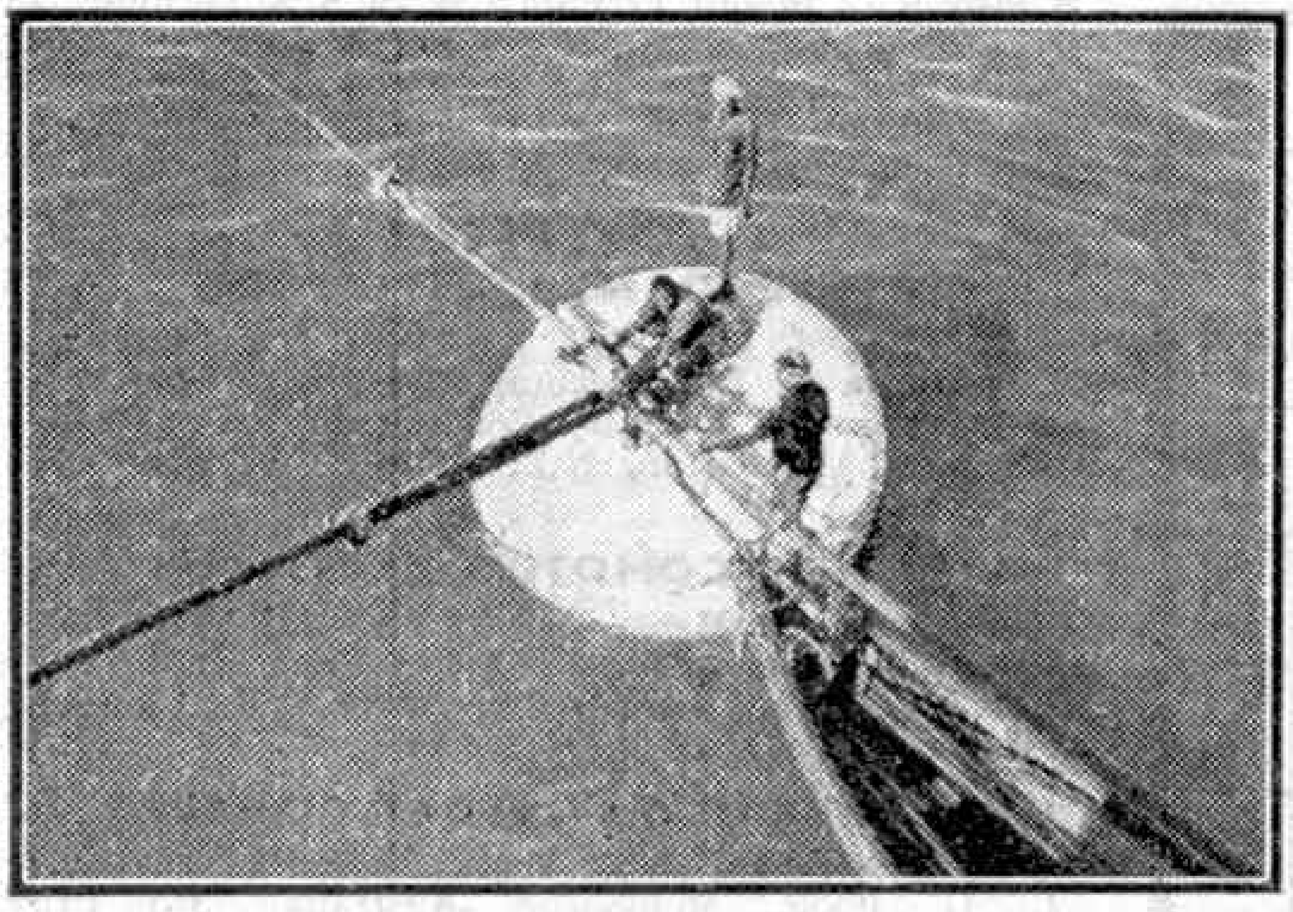
**"See, Hear and Speak." A September Photographic prize-winning entry by Mr. R. P. Barrett-Lennard of London S.W.1.**

# From Our Readers

*This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.*

## MOORING SHIPS IN ADEN HARBOUR

Ships going to India, Australia, and the Far East almost invariably call at Aden for fuel. There are no docks in the harbour, and for supplying oil barges fitted with pumps are brought out and pipe lines are connected up so that the oil can be pumped into the ship, which is moored in the harbour. Mooring buoys are provided for this purpose, and the accompanying illustration shows how a ship is moored to them by lascars sent out by the oil company for the purpose. This photograph was taken while a large ship was being moored and clearly shows the heavy hawsers necessary.



**Lascars mooring a ship in Aden Harbour in readiness for refuelling. Photograph by E. A. Moreton, Worthing.**

E. A. MORETON (Worthing).

## CONWAY SUSPENSION BRIDGE

I have often seen pictures of Telford's splendid suspension bridge at Conway as seen from lower down the river, but I think I was most impressed by it when I saw it from the top of Conway Castle. The photograph reproduced here was taken from this point of view. The towers from which the bridge is suspended were built in keeping with the Castle, and those at the Castle end are prominent in the picture. The workmen also seen there were putting up hundreds of electric bulbs to light up the splendid lines of this structure.

On the extreme right of the photograph can be seen the tubular bridges designed by Robert Stephenson to carry the railway across the river and opened in 1848, and between these and Telford's structure is a smaller suspension bridge that carries water mains over the river. R. WRIGLEY (Clitheroe).

## THE PAINTED CAVERN OF LASCAUX

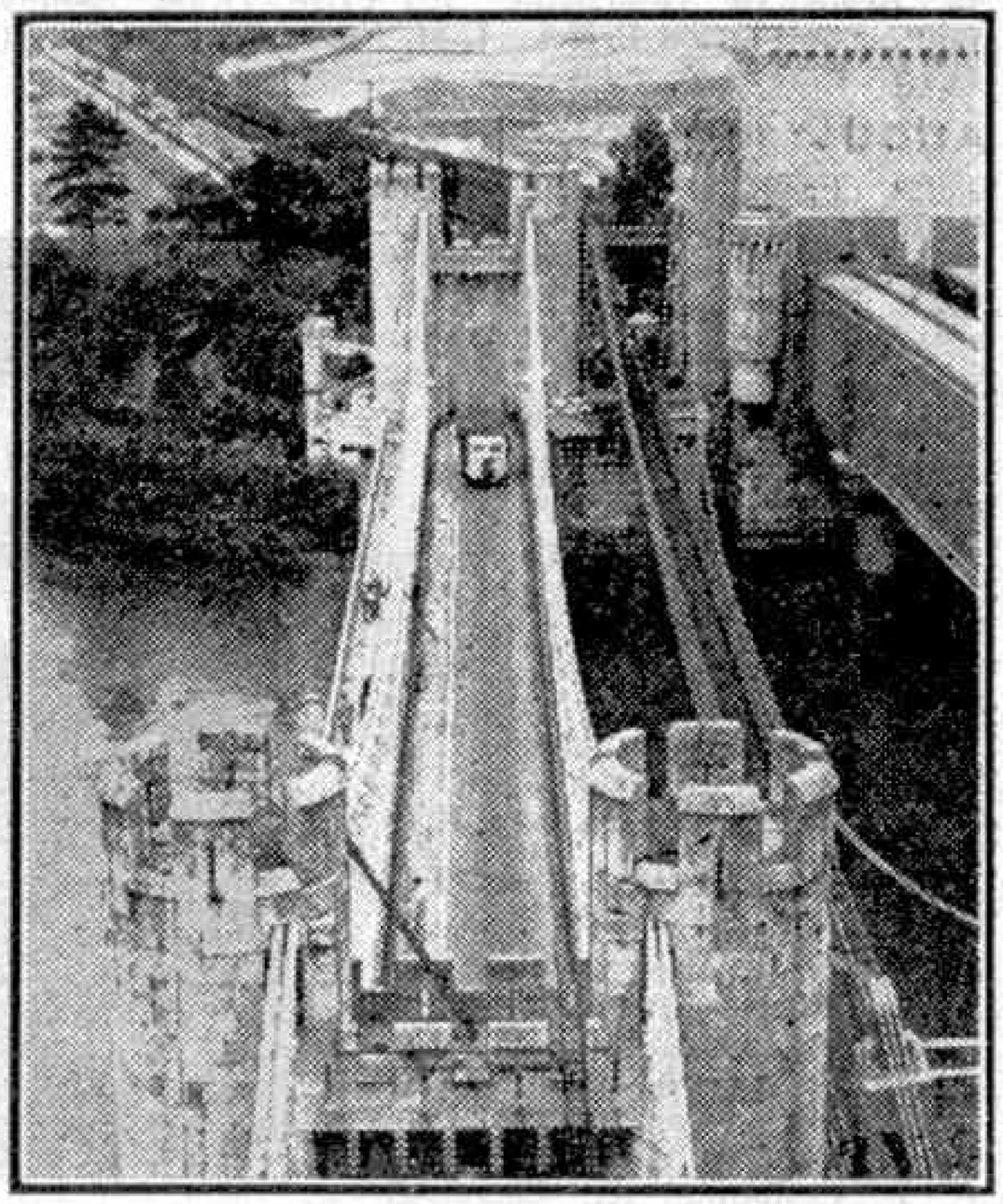
One September day in 1940 a boy, who with three companions was exploring the wooded hillside overlooking the village of Montignac, in the Dordogne region of France, lost his dog. It seemed to have disappeared into the earth. This was in fact exactly what had happened. It took some courage to follow the dog through the narrow aperture which the boys subsequently discovered under some bushes. When they did so they not only recovered their dog, but found also a large grotto, now famous as the painted cavern of Lascaux, which contains a series of remarkable prehistoric animal paintings.

I went to Lascaux this summer. The Great Gallery extends for about 30 yards, gradually getting narrower as it progresses. Near the entrance is a short connecting passage leading to a second gallery.

So vivid are the paintings that it is hard to realise that they are between 20,000 and 30,000 years old. Their preservation depends on the remarkable dryness of the air and the absence of stalactites. For the most part they depict hunting scenes, and among the animals represented are some no longer native to this climate, for example a small wolf and a bear with claws clearly visible. There is, too, a magnificent drawing of a herd of deer fording a stream.

Besides these conventional scenes there are some, more enigmatic, which suggest that the cavern may have been an ancient temple. One disquieting mythical beast, made up of parts of several recognisable animals, is perhaps the mask of a tribal sorcerer. Elsewhere are to be found engraved arrows and queer emblems which probably have a magic or religious significance.

At the bottom of a 30 ft. deep well-like shaft in the second gallery is the masterpiece of this prehistoric "Sistine Chapel." This depicts a man with a bird's head falling before an enraged and severely wounded bison. Beside them is a sort of totem pole surmounted also by a bird's head, while further off a rhinoceros is leaving the scene. A. F. A. STEWART (Belfast).



**Conway Suspension Bridge seen from Conway Castle. Photograph by R. Wrigley, Clitheroe.**

# Fireside Fun

"I used to get 100 per cent. in history, and you can only get 30 per cent."

"Yes, dad, but there wasn't as much to remember when you were at school."

* * * *

"Who is the smallest sailor in this ship?"

"I don't know every man in it. Tell me."

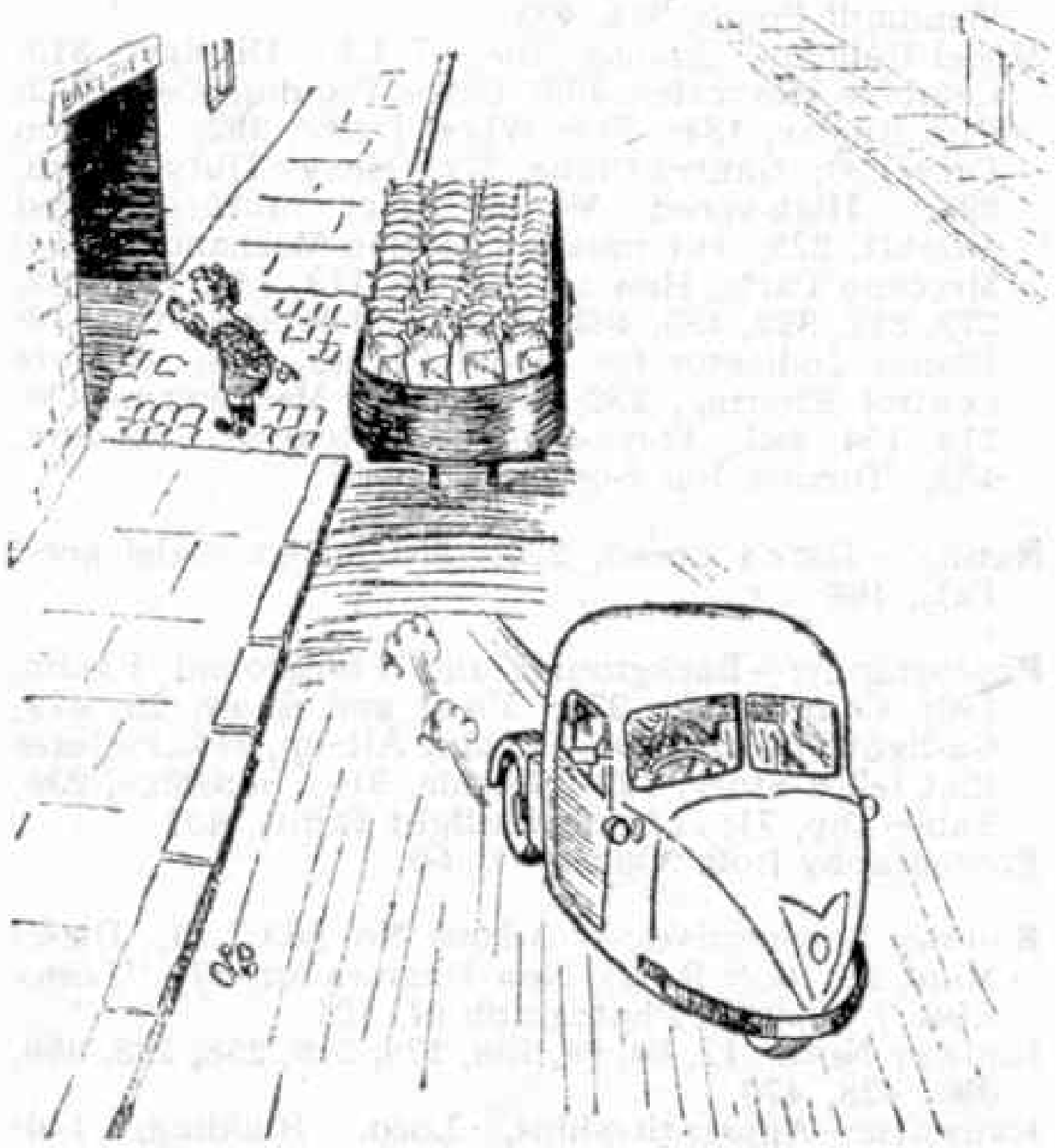
"Nobby Clark, of course. Didn't he go to sleep on a watch?"

* * * *

"Have you heard how Jones is this morning?"

"Oh, yes, a splendid report. They X-rayed his head yesterday, and found nothing there after all."

* * * *



**"Hi! Mister, yer 'orse 'as bolted."**

*(By courtesy of "The Commercial Motor.")*

* * * *

"Why did you put your hand in this man's watch pocket?"

"I wanted to know the time, your Honour."

"I can tell you that. It's six months."

* * * *

"I know all there is to know about football."

"Do you? Then tell me how many strings there are in a goal net."

* * * *

"You see that man over there. He was very lucky. He nearly got work in a Government department."

"That was unlucky surely. What went wrong?"

"There wasn't enough evidence."

* * * *

"You've given that door three coats of paint already, so I suppose you are putting on an overcoat now."

"Not at all. This is just a waistcoat."

* * * *

"The doctor has given you tablets this time, Bertie."

"Bother. I wanted pills."

"But tablets are just as good, dear."

"Are they! Have you tried shooting tablets through a peashooter?"

## BRAIN TEASERS

### THE KEYWORD HELPS

Here is a message hidden by means of a simple code in which letters are represented by numbers. It expresses my feelings to readers at the moment. A simple keyword of seven letters will help you to find the code.

14; 4, 14, 21, 13; 8; 17, 2, 6, 6, 3; 10, 13, 6, 14, 21, 22, 17, 8, 21; 22, 5; 8, 16, 16; 5, 11; 3, 5, 23.

K.J.B.

* * * *

### THIS CAN BE DONE

Can you make 20 with three nines. No, the arithmetic is not at all crazy. B.V.

* * * *

### A PROVERBIAL PROBLEM

Here are six sentences, in each of which is a hidden word. When read in order these words form a well-known proverb. What is it?

1. A naughty cat ran away.
2. They found a closely written roll in gathering up the rubbish.
3. This is the best one I have ever seen.
4. The rug at her side is not valuable.
5. He is an old friend of mine.
6. Amos saw through the trick quickly.

S.W.C.

* * * *

### A MONEY SAVING CHOICE

Jones was offered two kinds of linoleum, one costing 2d. per square foot and the other 1/3 per square yard, to cover part of the floor of a room, measuring 7 ft. by 4 ft. The first kind was sold only by the square foot and the second only by the square yard. Which was the cheaper for him? B.I.N.

* * * *

### A POINTED PUZZLE

In a football league Greenbank Paralytics, Redwood Rangers and Halfday Thursday have played 15 matches each. The Paralytics have won three more matches than they have lost, the Rangers have lost one more than they have won, and Thursday have won as many as they have lost. How many points has each team?

* * * *

### SOLUTIONS TO LAST MONTH'S PUZZLES

The nine chickens of our first puzzle last month could be distinguished by the use of two coloured rings, say yellow and blue. One chicken had no rings, two others had yellow rings on the left and right leg respectively and two more had blue rings fitted similarly, while two others had two yellow and two blue rings respectively. One of the remaining chickens had a yellow ring on the left leg and a blue one on the right, while the other had these colours reversed.

The words in our second puzzle were VAN, CAN, DAN, FAN, MAN, PAN, RAN, TAN, VAN and WAN. Readers who had NAN for No. 3 can claim to have solved the problem.

The DANGER notice in our third puzzle read ANYBODY WISHING TO ENTER DOES SO AT HIS OWN RISK.

The office boy in our fourth puzzle made a mistake. In three years he will receive £210. If he had chosen the alternative he would have received £225 in the same time.

* * * *

### THIS MONTH'S HOWLER

Harmonising is what you put on Christmas Cakes.

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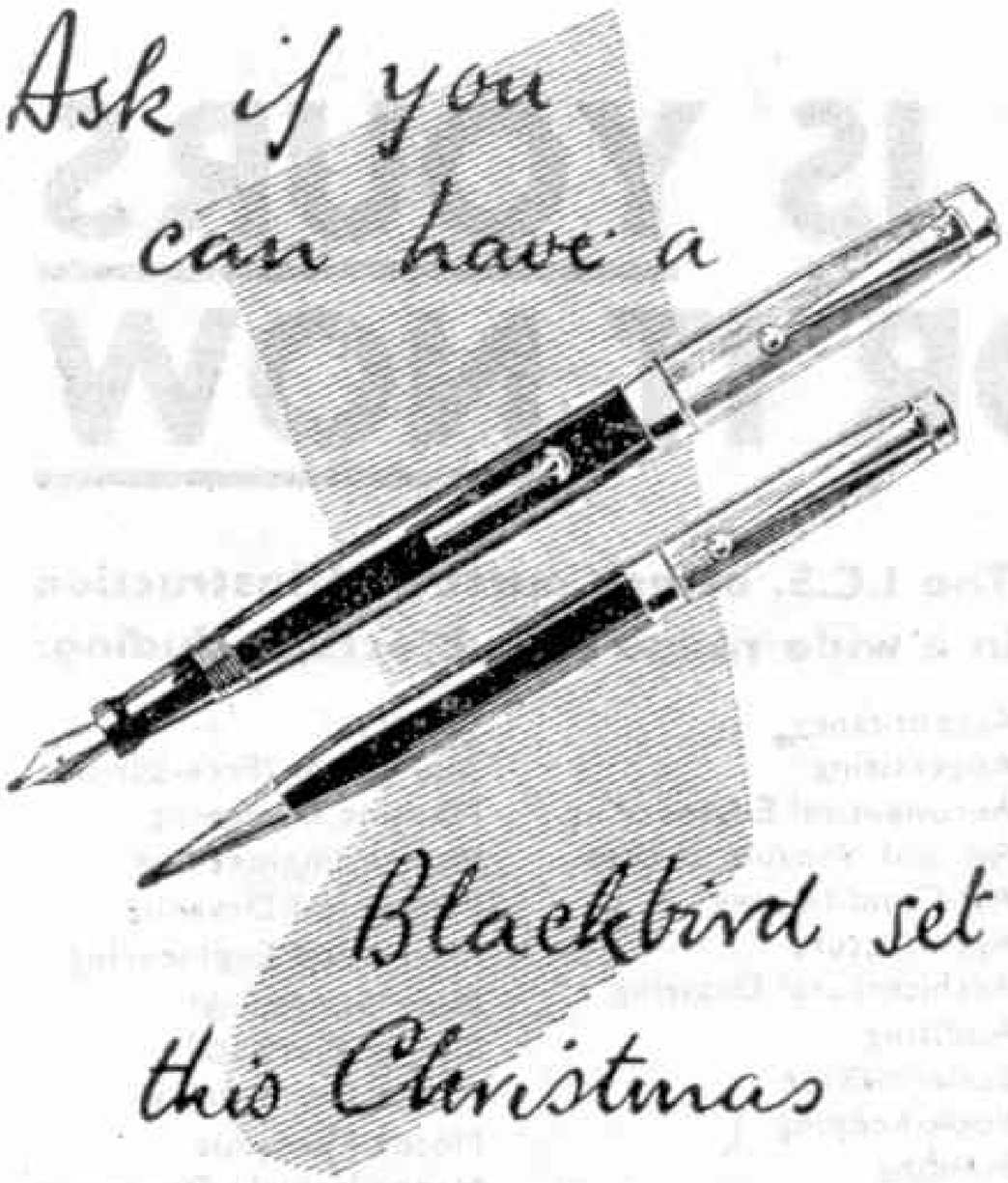

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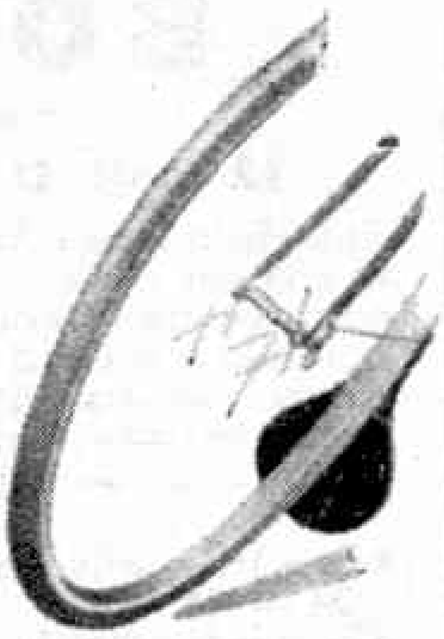

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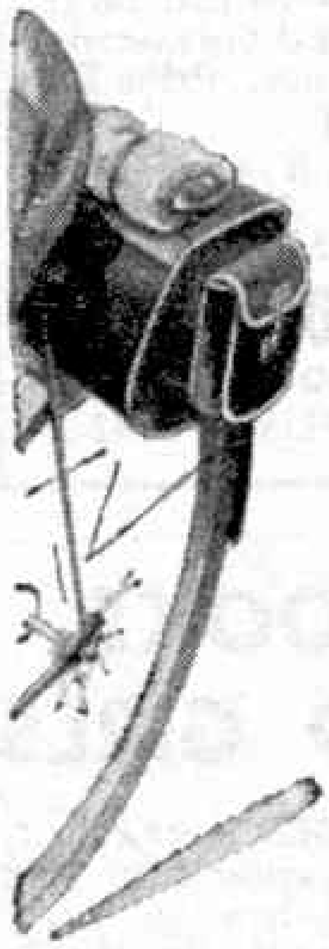

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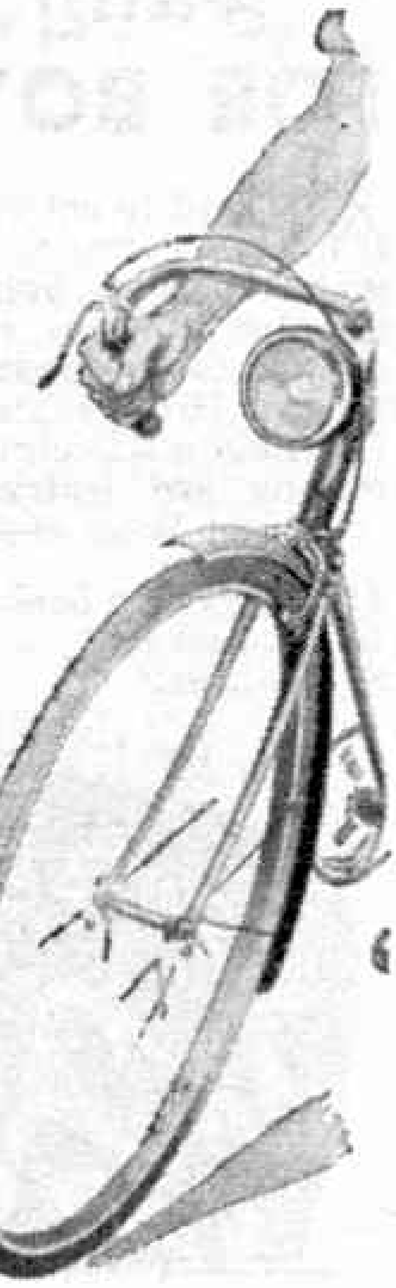

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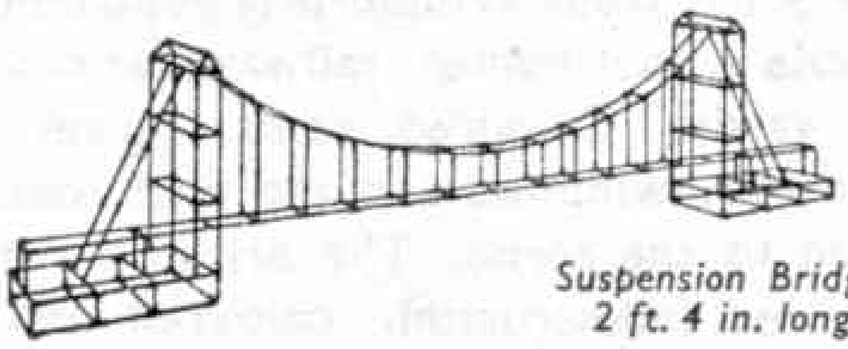

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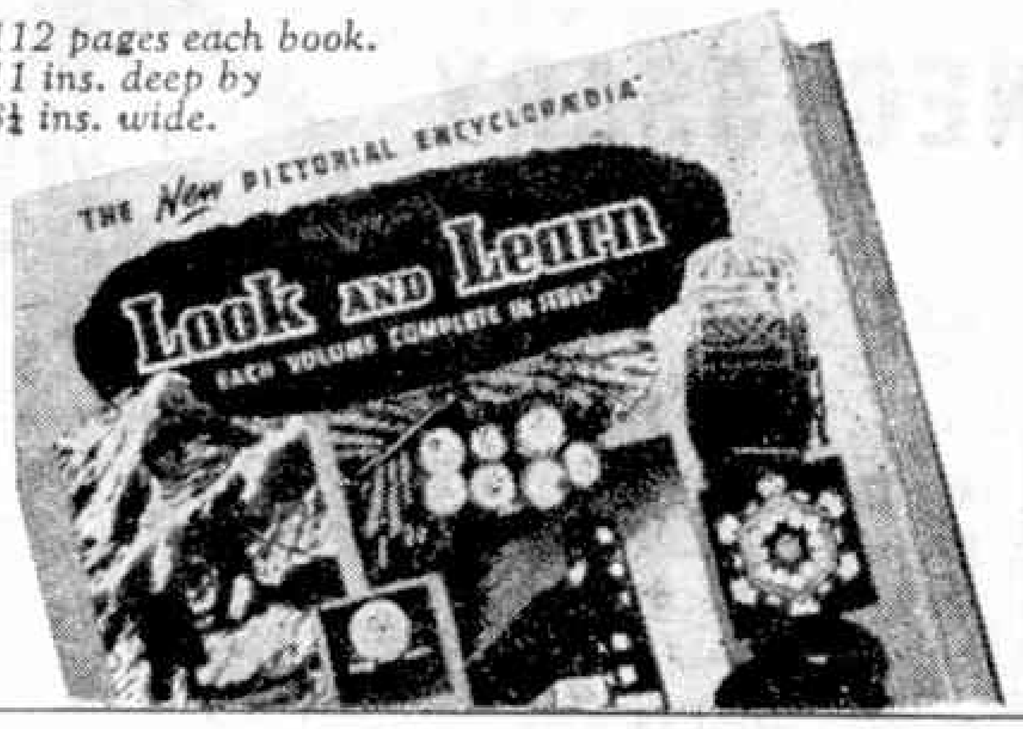


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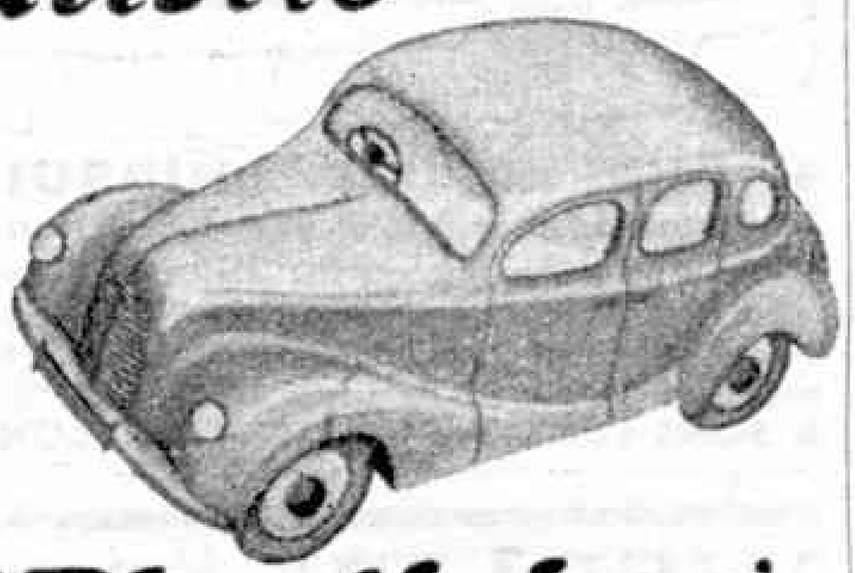

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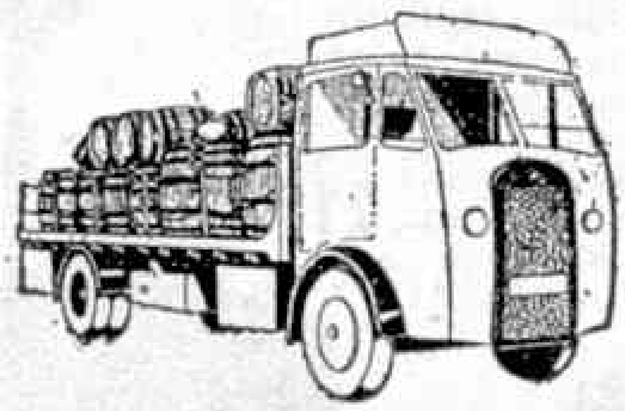

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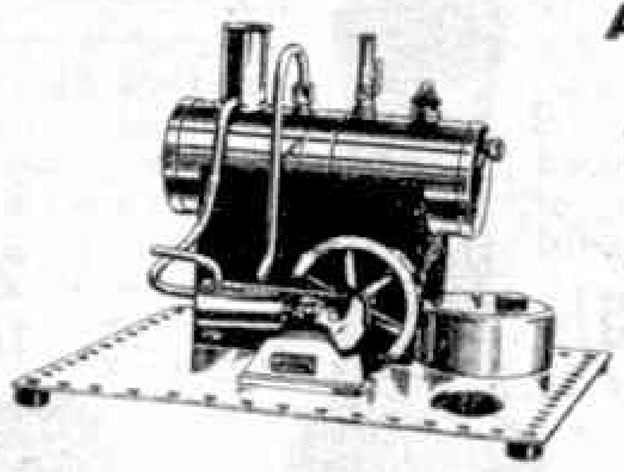

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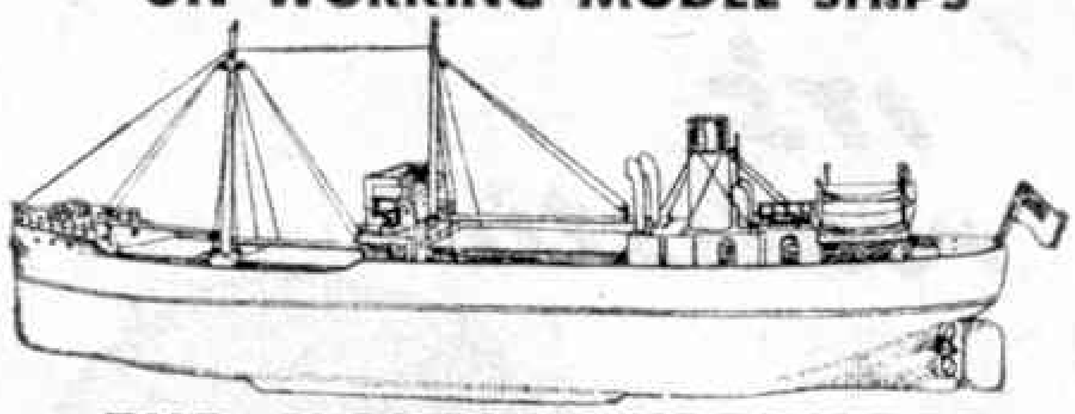

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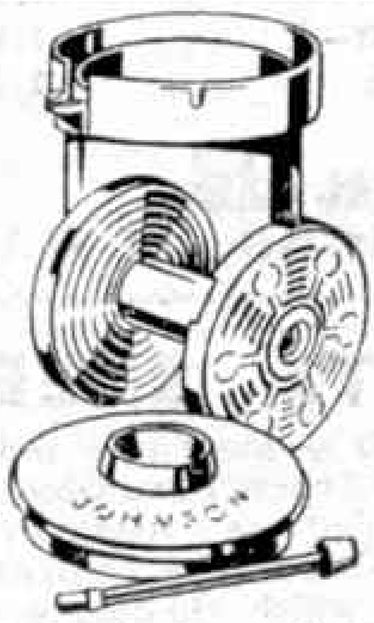


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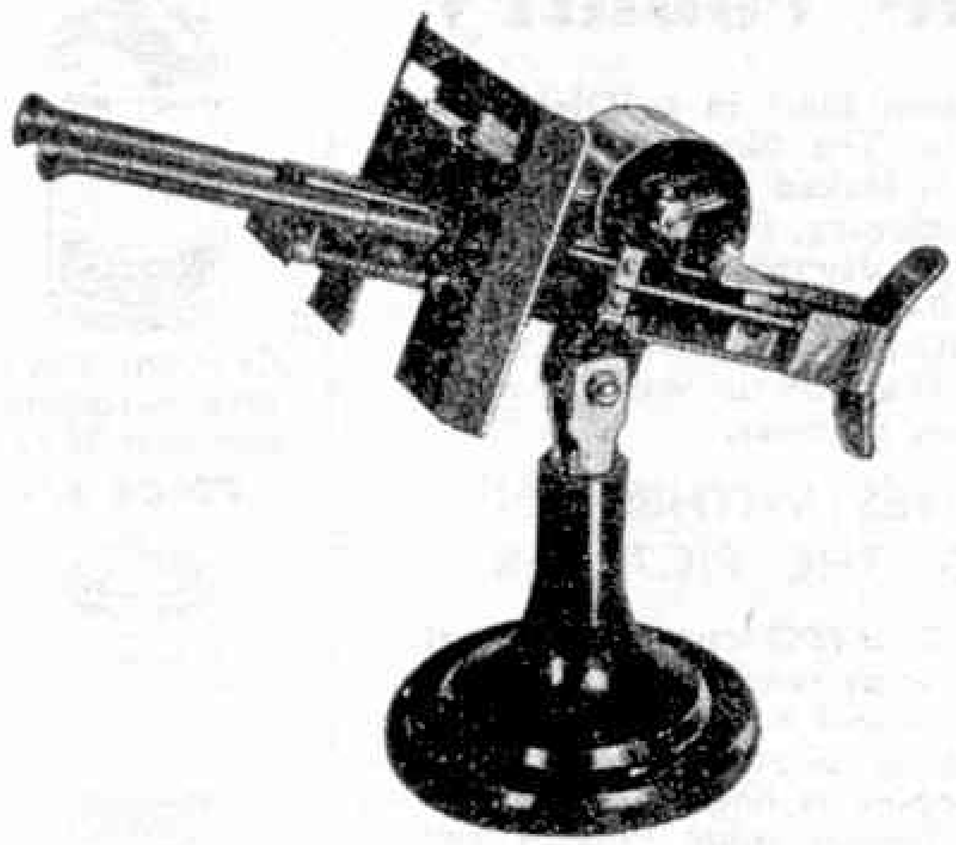

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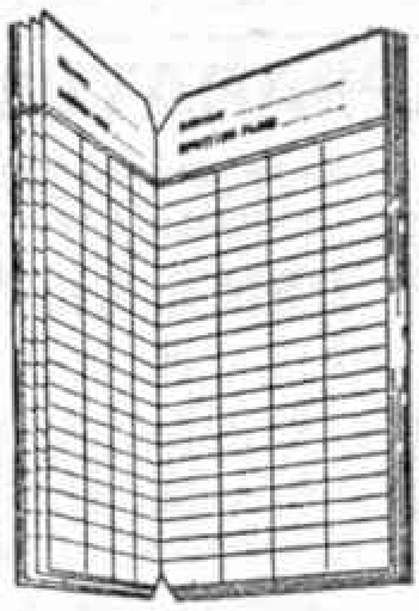

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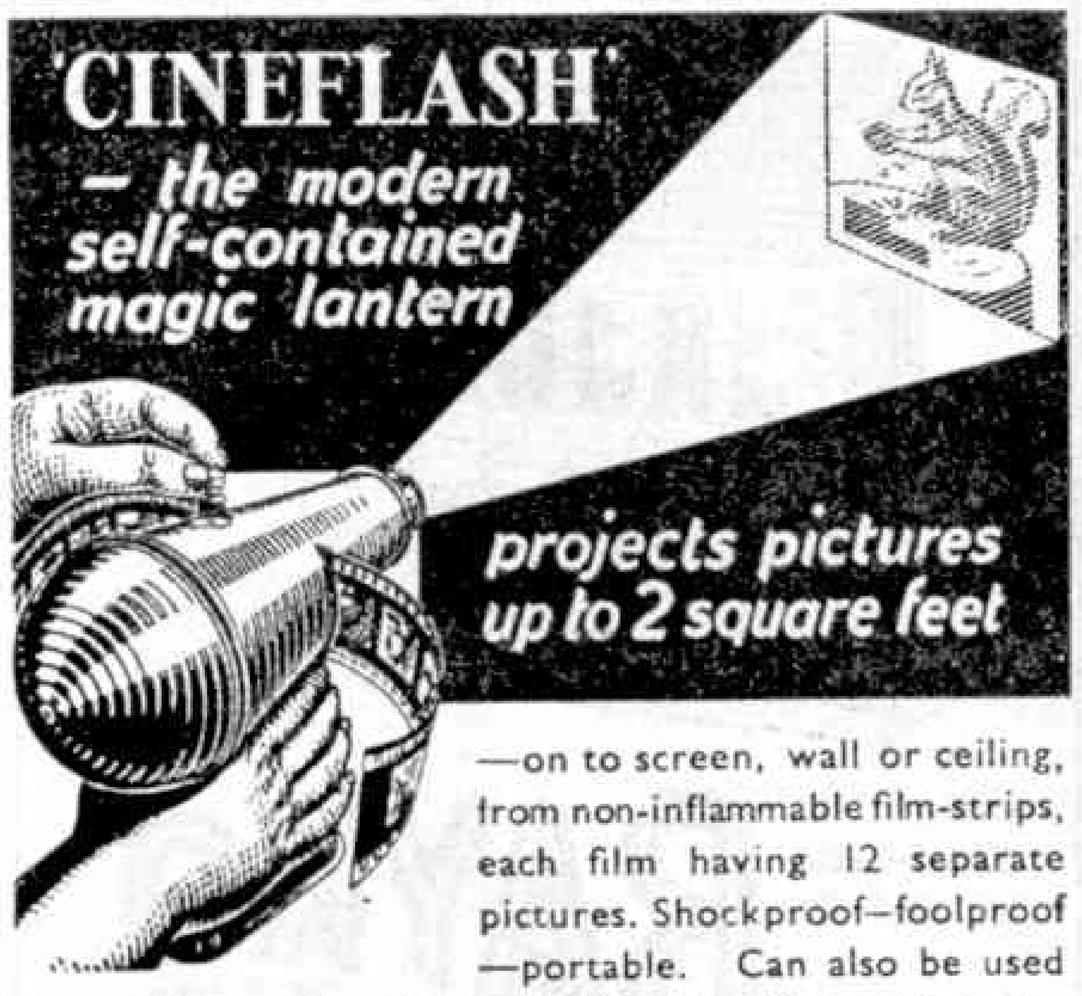


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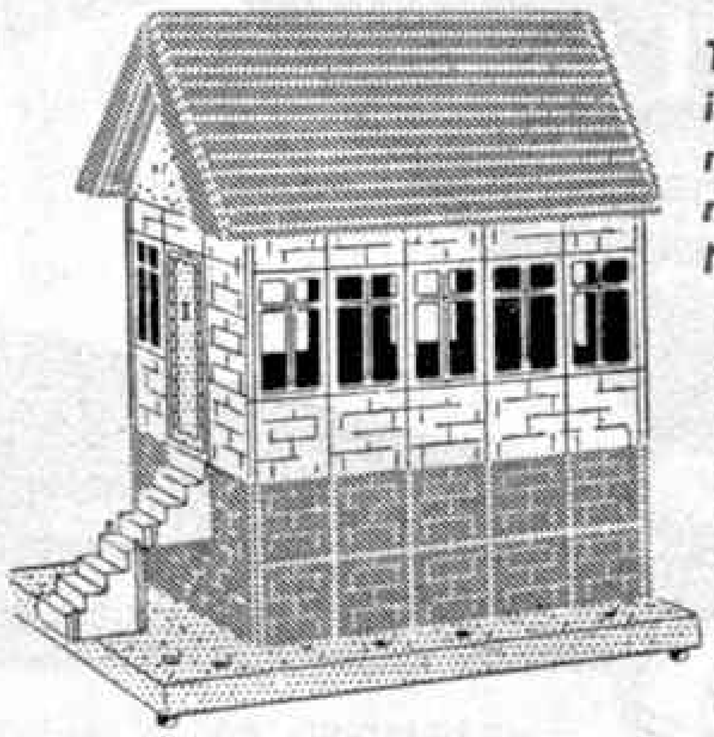

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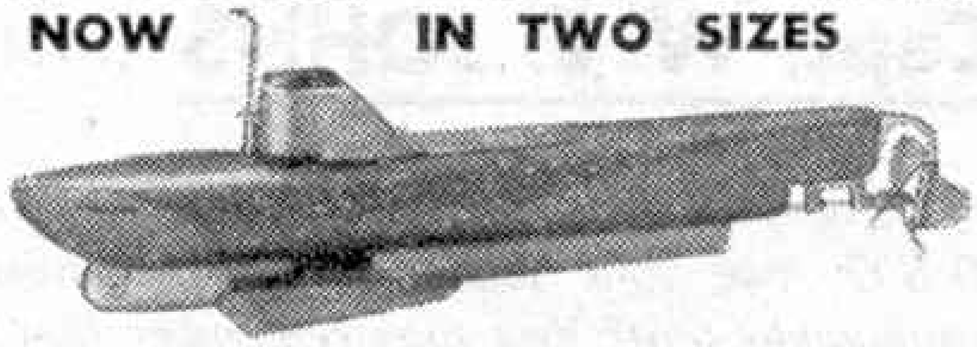

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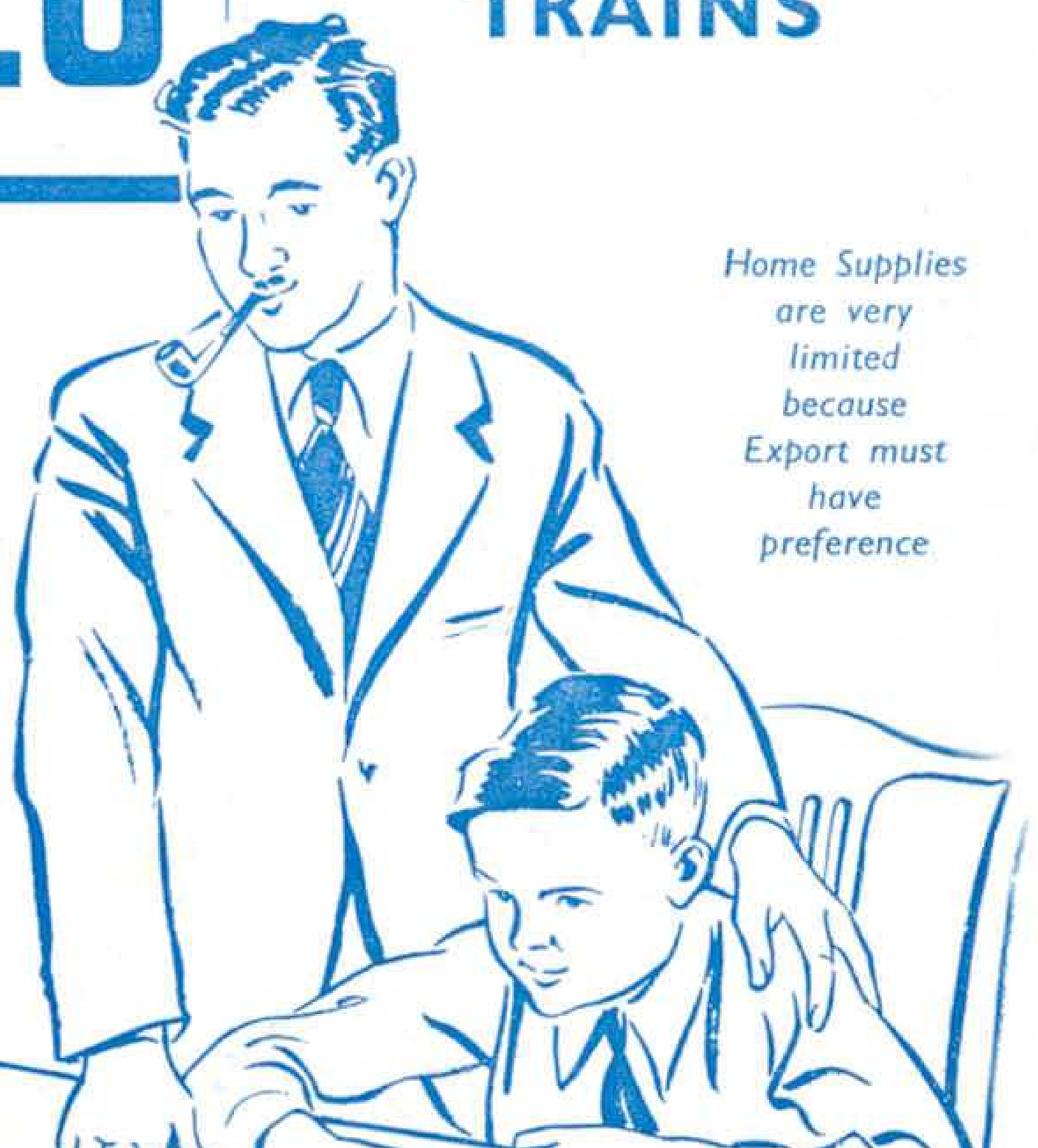

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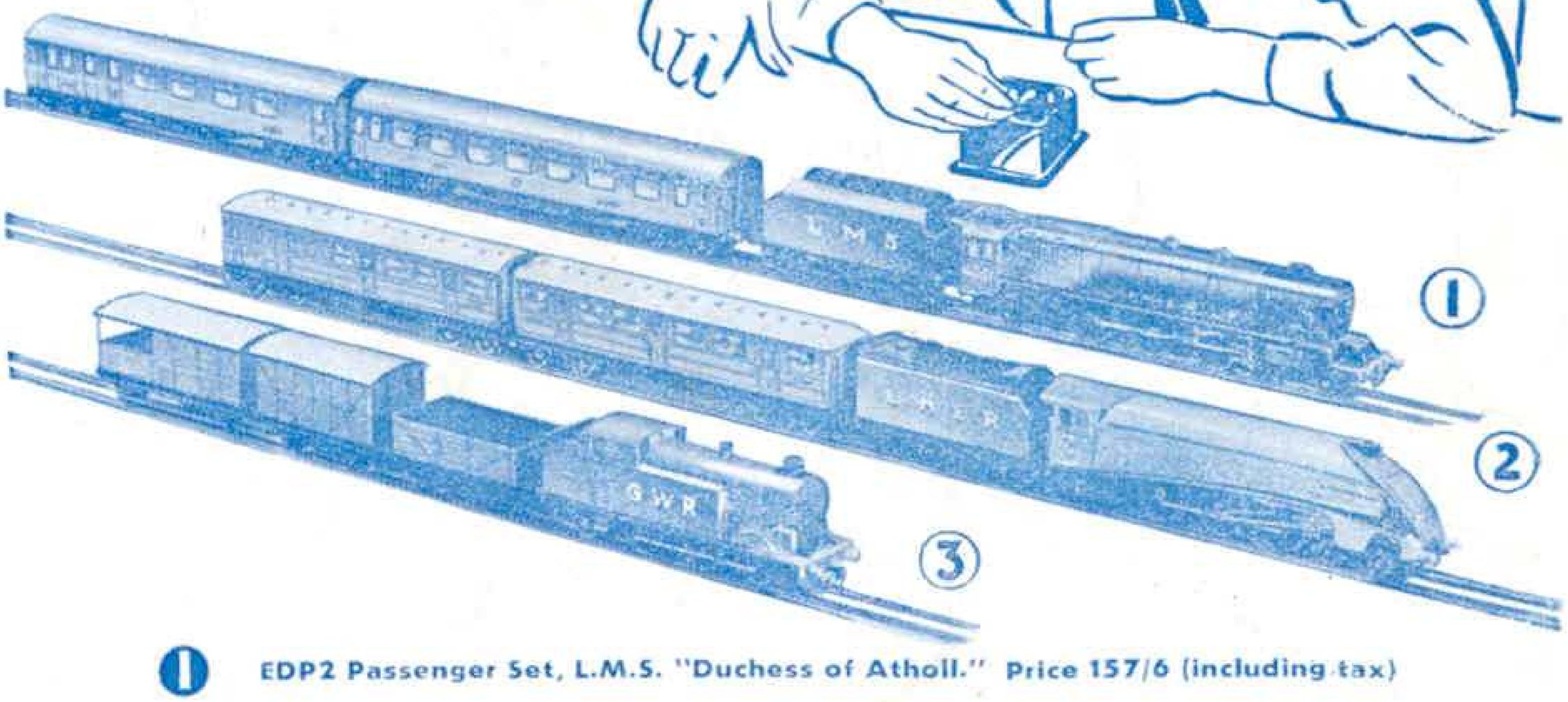


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